



## Original Correspondence.

## THE COAL FIELDS OF IRELAND.

When the Coal Famine was at its height, and a price fixed upon the commodity bearing no fair marketable comparison to its value, it occurred to many theorists in this country that our internal resources might be advantageously developed. Notably, in the North of Ireland, and in the county of Antrim more particularly, a commercial movement was set on foot, under promising auspices, to open the coal mines, which had been represented to contain mineral deposits fully equal to our home consumption. Eminent scientific men were invited to make surveys: the proprietors of the soil afforded every facility for the explorations. It was found—as, indeed, it had been frequently found—that a mine of wealth, approachable near the surface of the soil, was only awaiting the hand of enterprise to impart to it a value the importance of which cannot be estimated in figures. It has been said, and but too truly, that Ireland is a "dependent" nation; that we are reposing upon a Golconda of wealth, and existing in penury. That we are too inert to apply the ordinary advantages at our command to bring forth and to perfect, in a commercial point of view, the fruits indigenous to the soil.

We read daily and yearly in the contemporary press of Great Britain of the vast and inexhaustible natural resources she commands—her Duke of Devonshire, her Lord Dudley, her Lord Lonsdale, and her other coal giants have amassed and are amassing fabulous wealth from the bare products of an embedded soil, which neither their ingenuity nor talent created. They are the representatives of princes of fortune; they are fair representatives of a self-reliant nation, which, bowing to the golden goddess, have made fortune fame, and upon that fame they have founded British precedence over every commercial country on record. But what is the fact? Figuratively speaking, with bread positively lying at our doors we refuse to stretch forth the hand and place it in the larder. We have coal, and coal enough with which to freight every vessel coasting from these shores; we have coal enough to drive the whole machinery of our northern capital of Belfast, and the equally great works of Dublin, Cork, and Waterford in which steam-power is applied. This coal, by accredited reports, is equal in its properties to the best Whitehaven, Wigan, or Ruabon. Some specimens have been found in Co. Derry, equal to the productions of your celebrated Moira pits, Ashby-de-la-Zouch. One eminent engineer has certified, in a Governmental report, that the portion of ash to the substance raised is smaller by the proportion of 95 to 100 as against the best Whitehaven. Samples have been tried in fast running mills, in over-heated furnaces, and in domestic kitchen ranges, fully bearing out this conclusion.

The amount of this fuel at our command is variably estimated at 14,000,000 to 90,000,000 tons. The landed proprietors—absent though many of them are—have, through their agents, from time to time given free permission to geologists, and others taking a direct interest in the question, to carry out such preliminary explorations as circumstances might dictate. For the unearthing of the soil, the disturbance of both arable and pasture surface, no pecuniary demand was made. The Lord of Enniskillen himself, in reply to a favour asked of him, readily said, two years ago, "Take up my soil; sink any shaft you please. If you succeed, I shall then demand but a royalty of one shilling per ton." Upon the faith of this most liberal offer, it occurred to Mr. Gray, of Belfast, to organise a company to give effect to this concession. Now, the facts were these:—For many years past coal has been found by the tenant proprietors of the soil so near to the surface that they had, without difficulty, burned it for their domestic purposes, as they did the wood they felled, or the peat they grew. In fact, the upshot of the coal was so readily within their grasp that they burned it with as little regard to economy as a bad housewife dispenses her store, and its value was underrated in proportion to the excess of supply. As I have said already, the fictitious dearth across the Channel again prompted us to look to our home supply. For nearly two years the "coal ring" here was an autocracy. They commanded their prices. Neither the protests of the press, nor the representations of manufacturers and the public, nor the pitiful, though silent, appeals of the necessitous reached the hearts, if it did the ears, of the usurious combination. It was at this juncture that Mr. Gray, backed by many Belfast merchants, convened a meeting at the beginning of 1872 in the Belfast Chamber of Commerce. At that meeting Mr. Mulholland presided. From his presidency great things were expected, for the great linen factory of which he is the head is a monument to the successful flax culture of this country in its more finished form. Mr. Gray stated upon well-weighed authority that pecuniary means only were needed to bring into the Belfast market such a home supply of coal as would remove from our cross-Channel navigation that great fleet of coaling vessels upon which we depend. Upon the County Fermanagh property there was a pit opened so favourably that the sinking of a shaft was entirely unnecessary. He asked but for 200*l.* to enable him to give an impetus to his project. As an incentive to action, he stated that no charge would be made by him if the undertaking proved a failure. There were many monied men at that meeting—cotton lords and millionaires. They endorsed his views, they were complacent to a degree, but when a resolution was submitted asking for means three-fourths of those present vacated their seats as by a spasmodic visitation. The Chairman subscribed his name for a few pounds, the Mayor, with glowing and characteristic generosity, went as far as 5*l.*, and about half-a-dozen others, unsolicitous of fame, went in for 30*s.* be the same more or less: 200*l.* only was needed, but, tell it not in Gath, after the "begging" petition had run a paupered course of three months upon the tables of the Commercial News Room, in that great centre of northern enterprise something less than 30*l.* was subscribed. There is the coal; in the pockets of the capitalists is the money; in our thatchless homes are the nerve, vigour, the bone and sinew of the country, but we lack that which has raised Great Britain to its present enviable altitude among nations. We are groaning under a plethora of wealth. As petted children at the Christmas table gorge and disgorge without a thought from what source their ill-digested luxuries come, or who has to pay the piper, or from whence the next overladen freight is to land, so we, in our voluntary idleness, beggar ourselves by our inanition. The sum of 200*l.* would have opened one of the richest mines in Ireland; 30*l.* only was promised—so much was not given. And still we allow a fleet of coal-laden vessels to import to us that which, if we had a proper spirit of enterprise in our veins, we could freely and advantageously dispense with. I am constrained to say that, after a tolerably world-wide experience, I have never met with such an *effete* community, universally or individually. An old adage represents a grey-haired man as cicerone to a tottering child—"Trot not fast or you may stumble." We have not trotted fast, but we have stumbled. We have allowed, and are allowing, an extortionate country, whose motto is that of greed and gain, to traffic upon our sheer idleness, in order that the glory of a country upon which poets dilate as one upon which the sun never sets may be paraded before an admiring and contemplative world as a paragon of virtue, and of golden pre-eminence: 30*l.*! Mr. Gray! Mr. Mulholland! Belfast Chamber of Commerce! 90,000,000 tons of coal! a coal-starved population! a people with coal under their feet they will not unearth! an absent proprietary luxuriating upon the products from the earth, and with no further interest in the earth than that represented by a steward's banking balance! a priesthood, well intentioned, moderately educated, subservient to a power which does not admit of a proper development of intellectual calibre! an export trade comprising two-thirds of the whole of the traffic between Great Britain and Ireland! an import trade second only to any commanded by a European maritime power. This is a picture underdrawn in every outline. Faith has been pinned upon Mr. Gladstone's Liberal administration. It has not only been pinned, but stapled, with our repeal of the Land Laws, the fixity of tenure, the disestablishment of the Irish Church, disaffection prevails.

As with nations, so with individuals. We have not been taught the salutary lesson of self-support. Relying upon successive Governments for extraneous aid, we have—unwittingly though it may be—assumed the prostrate attitude of a suppliant, when self-respect,

if no higher motive, should have led us to appear in the armour of self-supporting knight-errants. A subsidised country is but one removed from pauperism: how long will the gallant Erin allow the stigma of "dependence" to disfigure the boldest outlines of her escutcheon? I write not in anger, but as one whose Celtic blood impels him to deplore the degeneracy of his country.

Incidental to this subject, Mr. J. M. Meadows, C.E., has just read a paper on the Leinster Coal Fields before the Geological Society. He directed attention to the Three-foot seam of coal forming the celebrated Kilkenny Coal Mines, which yielded a supply of from 13,000,000 to 14,000,000 tons, but had been exhausted about 25 years ago. Speaking of the supply of the future, he said the first workable had been ascertained to be the Jarro, or Four-feet, seam, and several workings had been opened upon it. It might be looked upon as the principal means of future supply.

The character of the seam was variable in thickness, the greatest depth being found in the interior. The seam below the Jarro was known as the "Rushes," it had been worked in several parts, but was the least valuable in the district. An explanation was given of various strata intervening between the different seams, and allusion was made specially to the opinion of Sir Robert Griffiths' report of the lecturer's theory. The correctness of the conclusion arrived at was shown by diagrams of various portions of the field, and by comparison of the strata of Slieve Ardagh coal field. The present output from all the workings in the Leinster coal field was at the rate of 80,000 tons a year, while the position of 600 miners was far above that of the average of the agricultural labourers. The coal of all the fields was anthracite, or smokeless; it was used for milling and corn-grinding purposes. From the report of the Royal Commissioners the total quantity of coal in the district was estimated at 75,000,000 tons, 50,000,000 of which was of practical value.

Reference was made to the non-connection of the railway with the coal fields, which was considered as an essential to their efficient working. In the course of the discussion that followed the Chairman referred to the similarity in the stratification of the Leinster coal fields and the Lancashire and Welsh coal fields. He also deprecated the want of foresight in engineers who carried railways throughout this country in seemingly keeping away from the coal districts, which could be made so valuable. This had been done in absence of any expectation that coals would reach 40*s.* a ton.

## PROMINENT PHASES OF NORTHERN METALLURGY.

Scarcely a week passes in which we are not called upon to chronicle some new phase of metallurgic industry. All who are employed, directly or indirectly, in this important trade appear to recognise the fact that there is no finality in improvement, and that the more progress we make in the direction of industrial economy the more clearly the long vista of economical possibilities in the future is exposed to our view. Given skill, patience, and perseverance, with ample and adequate facilities for trustworthy experiments, and there is no saying to what shape the pioneers of metallurgical progress may mould the future of that industry. It is admitted on all hands that there is unlimited scope for progression, that some of our metallurgical processes are crude and improvident, and that England's industrial future must to a large extent be governed by the new economies which are brought into operation. It is cheering to find that never was the practical acknowledgment and appreciation of this fact so wide spread and undisputed as at the present time. Progress is the watchword of the masters, the oriflame of the workmen, the goal of the man of science. It is not to be wondered at that there should be such a remarkable activity in the metallurgical arts when we consider the scope that they afford for the rapid acquisition of riches. It is true that some of the greatest apostles of metallurgical science have not in their own lives reaped the reward of their labours. HENRY CORT, "the father of the British iron trade," died in comparative poverty, after spending all his fortune in carrying out the improvements with which his name is associated. ROGERS, the inventor of the iron bottoms that were the means of introducing a new era in the manufacture of finished iron, died in poverty and neglect, and even when an appeal was made to the iron trade on behalf of his widow the response was utterly inadequate. But, on the other hand, the inventions of NEILSON, who substituted hot-blast for cold in the manufacture of crude iron, and of BESSEMER, whose process resulted in reducing by more than one-half the cost of steel rails and plates, secured for each of them a splendid fortune. Examples of this kind afford encouragement to those who, it may be in the midst of ridicule and obliquity, are seeking to alter the old order of things, to persevere in such efforts as are founded on sound principles and admitted possibilities of improvement.

In the Cleveland district there are at the present time several important metallurgical improvements under trial and investigation. In their order they may be thus summarised:—1, the DANKS' system of rotary puddling; 2, the utilisation of blast-furnace slag; 3, the use of peat for metallurgical purposes; 4, the economy of coke; and 5, the purification of cast-iron. It may be interesting to review the stages by which each of these improvements have attained to their present perfection, and to consider, as far as we can, what remains to be done in the future.

1.—As regards Mr. DANKS's system of rotary puddling, it appears to many men not wilfully prejudiced that it has been little else than a flash in the pan. If it is remembered that when the patentee read his paper before the Iron and Steel Institute in 1871 there was a profound sensation created among iron manufacturers all over the country; that when Mr. DANKS came into the Cleveland district he held many interviews with the ironmasters, each of whom seemed more anxious than the others to adopt the new process; that an arrangement was made with Mr. DANKS by the Cleveland Ironmasters' Association, whereby he was to receive 50,000*l.* for the patent rights of 200 of his furnaces; that it was afterwards agreed to charge 250*l.* for the patent rights of each furnace, and 2*s.* per ton royalty on the iron produced; that the Commissioners appointed to go to America, and report upon Mr. DANKS's system to the Iron and Steel Institute, declared it to be all but perfect; and that the first experimental trials with one of Mr. DANKS' rotary machines at the Tees Side Ironworks, Middlesborough, were pronounced to be most satisfactory—when all this is remembered it seems a most unaccountable thing that the rotary system of puddling has made so very little progress. It is only in operation at two works in the Cleveland district—those of the Erimus Iron Company and the North of England Industrial Iron and Coal Company. Its results at these establishments have been kept as secret as they possibly could, and any reports on the system that have found their way into print have been declared to be unauthorised. It is no secret, however, that in some important essentials the system has proved a failure, and it is rumoured in the Cleveland district that it has given so much vexation and trouble to those who have adopted it that they have now and again seriously contemplated its abandonment. This may or may not be true, but we are in a position to state authoritatively that Mr. DANKS's furnaces at both of these works have produced excellent ball furnace iron and puddled bars. It has also been proved that by using molten metal brought direct from the blast-furnace there is an economy of fuel. The latter course cannot yet be adopted at any of the works where the system is in operation, but it is on the cards to construct a cupola on a new system, patented by Mr. THOMAS, of the Acklam Refinery, for the purpose of melting the iron before it is poured into the rotary furnace. Another source of difficulty arises from the lining or felting of the furnace, which is liable to give way, thus causing great injury to the furnace, but by using molten metal this danger will be largely obviated. By the use of a combined squeeze and cutter or shear, patented by some gentlemen in Darlington, and exhibited in Middlesborough for the first time this week, it will also be possible to secure "blooms" of a uniform size and weight, and suitable for ordinary rolls—a desideratum not hitherto supplied. Step by step, indeed, Mr. DANKS' system is being rendered more perfect and practicable, and when at length it comes to be adopted in other parts of the kingdom the credit of having adapted it to the exigencies of the English iron trade will belong to the Cleveland district.

2.—The utilisation of blast-furnace slag is a subject upon which

much has recently been written, but not more, perhaps, than its importance warranted. A company has been formed in Middlesborough for the purpose of working the combined patents of Mr. CHAS. WOOD, of Middlesborough, and Capt. BODMER, for the utilisation of blast-furnace slags. Mr. WOOD has already made about 12,000 tons of slag, all of which has been sold or made use of for building or concrete work at a considerable profit. But Mr. WOOD's principal patent aims at the utilisation of slag for agricultural purposes by reducing it to slag sand. The *rationale* of this process is exceedingly simple. The slag flows from the furnace into a bath of water, varying from 2 to 3 ft. in depth. By the revolution of a cylinder in the machine, and buckets or screens attached to the inside, the water is kept in a state of violent agitation, and the liquid slag coming into contact with the agitated water is caught and scattered into sand. The cost of working this machine is as follows:

Make of furnace (say) .....	25 tons of iron.
One man per day .....	3 <i>s.</i> tons of slag.
8000 gallons water, at 3d. .....	5 <i>s.</i>
Wear of machine (say) .....	2 <i>s.</i> per shift.
	5 <i>s.</i> = 12 <i>s.</i>

Supposing, therefore, that 30 tons are converted into slag, it gives  $12 \times 2 \div 30 = 48$ , or nearly 5*d.* per ton. It is also found that by sinking the slag sand with lime an excellent mortar can be produced at 4*s.* 6*d.* per ton, whereas the commonest kind of mortar employed by builders does not cost less than 16*s.* per ton. In these two applications of this hitherto waste product there is undoubtedly scope for the creation of a large industry, of which we have only seen the commencement.

3.—The use of peat for metallurgical purposes has long been talked about, but except to a very limited extent it has not yet been realised, nor is there any very strong probability that so long as coke continues plentiful and reasonably cheap recourse will be had to our peat bogs as a source of fuel supply. It is, however, admitted that compressed peat, owing to its freedom from sulphur, is admirably adapted for metallurgical purposes, and the recognition of this fact was pressed upon the Cleveland engineers at their last meeting by Mr. C. E. BAINBRIDGE, of Middleton-in-Teesdale, who has established works for the compression of peat in South Durham. The only doubt about the matter is whether peat would prove as economical as coke. Mr. BAINBRIDGE thinks there would not be much difference in the present state of the coke market, and after making allowance for the cost of freight from the uplands of South Durham to the Tees-side district. In the North of England, and within 30 or 40 miles of the congeries of blast-furnaces situated around Middlesborough, there are peat bogs of almost unlimited extent, and arrangements are now being made for compressing the peat so as to adapt it for use in the manufacture of iron, so that within a very short time we shall see the compressed peat of the moorland districts brought into competition with the coke of South Durham. If in this rivalry peat should run a winning race, then there will be increased hope for the future of the North of England iron trade, for it is calculated that the coal available for the manufacture of iron in Durham and Northumberland will become exhausted long before the ironstone contained in the Cleveland hills; and if by the partial use of peat it is found possible to prolong our supplies of fuel it will be all the better for succeeding generations.

4.—Closely allied to the subject we have just been considering is that of economy of coke. This is certainly no new phase of Northern metallurgy. It is one that has been under consideration for many years. But, while much has already been done, much, if not more, yet remains to be accomplished. Our ironmasters have reduced the proportion of coke required to make 1 ton of pig-iron from 35 to 23 cwt., but they have made no progress in the economy of coal in the coking oven. It is here that the economists must find their work in the future. In many cases the coal of South Durham does not yield more than 50 to 55 per cent. of coke, whereas it should yield at least 60 to 70 per cent. under more scientific treatment. Then, again, there has hitherto been little or no attempt made to utilise the waste heat of the coking ovens—a vast and prolific source of calorific power. It is probably no exaggeration to say that the heat wasted in the coking ovens of this country would be adequate, if properly directed, to actuate all the steam-engines in the kingdom. Coking ovens are, of course, generally erected in close proximity to collieries, and in places where no other forms or combinations of industry are carried on, and, therefore, it has been urged that the utilisation of this waste heat is only practicable for the manufacture of bricks, or for cognate processes that may be carried on as advantageously at one place as at another. But there is nothing to which the waste heat from coking ovens is so well adapted as the raising of steam; and wherever or for whatever purposes steam may be required the waste of calorific power may be utilised, and steam is so universally necessary that it is rarely possible, even in the most isolated districts, not to find uses for it. This, at any rate, appears to be a view that finds acceptance with not a few of our coke manufacturers in the North of England, who are now taking steps to economise this large source of waste. A number of patents for this purpose have lately been taken out, and two are in successful operation in South Durham. One of these is the patent of Mr. ALFRED JOBSON, of Messrs. JOSEPH PRAESE and PARTNERS; the other is that of Mr. JOHN MARLEY, of Darlington.

5.—Of the last item on our programme we are not now in a position to say more than a few words. It is acknowledged on all hands that the refining of the pig-iron of Cleveland would adapt that metal to be used for purposes for which it is not now suited, and more especially if it were possible to eliminate or reduce to something like a trace the phosphorus and sulphur which it contains, and which renders it altogether unsuited for the manufacture of steel. Attempts are now being made at one of the Tees-side works to refine the crude metal by a new process, which without any considerable extra cost will adapt it for the higher purposes of metallurgy. The process has not yet passed beyond an experimental stage, but it is pregnant with possibilities that may open up a much brighter future for the Cleveland district.

COAL MINING IN CHINA.—Some information upon this subject is given in an official report upon the trade of Tamsuy, including Kelung, where coal abounds in great quantities. The system of working these mines—as indeed Chinese mines generally—is exceedingly primitive and imperfect. Places where the mineral is observed cropping out of the hill side are selected, and an opening 5 ft. high or more by 2 ft. wide is driven horizontally for a distance of some 40 yards, terminating in a central chamber, from which workings 100 yards or more in length radiate in a direction which usually inclines slightly upward. In these workings, which in many cases can only be entered on all fours, the miner carries on the work of excavation, squatting in mud and water, and breathing a most foul atmosphere. One mine usually employs about 12 or 15 miners, who earn wages equivalent to about 1*s.* 6*d.* a man per diem, which is an extremely high rate in China. The usual length of a day's work is about 11 hours. The miner is armed with a pick shaped like a sledge-hammer, with one head pointed, and weighing about 6 lbs. The length of the iron head is about 8 in., and of the wooden shaft 2*1/2* ft. The miners' lamp is a saucer of oil, with a rush wick laid into it. The coal is drawn along the pit's floor to the mouth in a basket about 3 ft. long, fastened on a board, and a rattan cord attached by which to haul. Occasionally the board is fastened with rollers, and travels on planks laid down for the purpose of forming a rudimentary tramway. In consequence of the imperfect tools employed great waste occurs through so great a quantity of the coal being reduced to a powder. The ventilation of the mine is left to itself, and it is stated that no system of pumping out the water is employed. The water runs out at the mouth of the mine, and in cases where the galleries take a downward direction the only resource left is to abandon the workings when the water excessively accumulates. Firedamp is unknown, but accidents often happen from the sides and roof falling in, which, from the insufficient way in which they are secured, are almost inevitable. Generally speaking, it may be assumed that the coal working at Kelung is little more than a mere scratching of the surface, and that the real coal beds may be considered to be practically untouched. The Chinese Government rather put drawbacks in the way of these mines than offer facilities for their working. The owner of land which contains coal is not permitted to open a mine without previously obtaining the sanction of the authorities, which involves a great delay and expense, and is after all usually refused. As to the introduction of machinery for the better working of the mines, the proprietors have not sufficient capital to purchase such machinery, nor do they wish to do so. Supposing, however, that they were both able and willing, it is stated that such an innovation, accompanied as it would be by the employment of foreigners, would be the immediate signal for the closing of the mines by the mandarins, and the not improbable loss of the proprietor's head. The quality of this coal has been favourably reported upon by competent engineers, and it is stated, in fact, upon good authority that for household purposes Kelung coal has no superior.

DRIVING BELT.—Mr. B. HOFFMARK, of St. Petersburg, has invented a new driving belt, which is composed of a series of links, each link consisting of wire formed into what may be termed a flat oval spiral. The links are connected together by transverse rods having hooks at their ends.

# The Chapel-House Colliery Company (LIMITED).

Registered under the Companies Acts, 1862 and 1867.

CAPITAL £140,000, IN 28,000 SHARES OF £5 EACH.

The property consists of the well-known Chapel-House Colliery, situate in the district of Skelmersdale, about 14 miles from Liverpool, and 4 from Ormskirk, and is held under various leases, the particulars of which may be seen at the offices of the company. There are 11 known seams, with an aggregate thickness of over 37 ft. of workable coal, seven of which seams extend under the whole of the royalty.

The coal is of good quality, well known in Liverpool, and much liked; in fact, large purchases of coal have been effected in order to supply and keep together the customers, in anticipation of a larger output.

There is a very large plant, consisting of the necessary pits, machinery, stagings, stores, &c., 148 wagons, 28 flats or lighters, 3 schooners, and everything necessary for the carrying on a very large shipping trade; offices at Liverpool, and a wharf at Dublin; the whole being taken over by the company, with the goodwill of the business as a going concern.

The coal is easily worked, there being but little water, and consequently, no pumping machinery is required. There is neither gas nor noxious vapour, and the men work with naked candles.

The present output amounts to over 300 tons per day, but by the further sinking of the pits and the extension of the works this output can be increased to 1000 tons per day; when the profits should be in proportion; and even should coal depreciate in value, from the cheap rate at which the colliery can be worked, the shareholders will still possess the most valuable dividend property.

A balance-sheet, which has been audited by Mr. G. E. Holt, one of the first accountants in Liverpool, gives as profits for the three months from the 22nd of May to 20th of August, 1873, the sum of £10,791. During that time 21,400 tons were raised, at a cost of only 3s. 3½d. per ton; the cost of delivery at Liverpool alongside purchasers' vessels being 2s. 5½d. per ton, making a total cost of 5s. 9d. per ton, the average price realised being 16s. 1d. per ton, showing a profit of 9s. 4d. per ton.

Since that balance-sheet was made out Mr. G. E. Holt was directed to prepare a further balance sheet from the 21st August to the 31st October, after which date

the property would be taken over by the company, and the profits during this period, as shown in his balance-sheet, amounted to £9371. The profits, therefore, from the 22nd May to 31st October was, it will be seen, £20,192, from which, however, the royalty of 1s. per ton, amounting to £1876, will have to be deducted, leaving a net profit of £18,316, or at the rate of £41,267 per annum.

The directors have secured the services of Mr. Joseph Loughran and the very able staff under whose management the colliery has been brought to its present very satisfactory position, and they can see nothing, therefore, to interfere with its continued prosperity. A reference to the above figures and to the balance-sheet would make it appear impossible for the work to be more economically and effectively carried on.

The advantages possessed by this colliery, and attending an investment in it, may be summed up as follows:—

1.—Its close proximity to the Port of Liverpool (with which there is a direct railway communication from the pit's mouth), where a heavy and continued demand for steam coal exists.

2.—The cheap rate at which it can be worked, many expenses incurred in some other collieries, sufficient to pay a good dividend on the capital, being altogether absent.

3.—Its being taken over as a going concern, making large profits.

4.—That the property being taken over as from the 1st November, the profits from that date will accrue to the company, and will be available for an early dividend.

Considering the efficient nature of the plant, the facilities for working, and the proximity of the colliery to Liverpool, where there is a constantly increasing demand for the coal, and the exceptionally favourable terms on which the property has been secured, there has seldom been offered to the public so eligible an investment.

Shares can at present be had at par on application to Mr. THOMAS THOMPSON, Jun., 1, Palmerston-buildings, Bishopsgate-street, London, E.C.

## Meetings of Public Companies.

### DOLCOATH MINING COMPANY.

The quarterly meeting of adventurers was held at the mine on Monday, at which there was a very full attendance,

Mr. CARTWRIGHT in the chair.

The following statement of accounts was produced:—

Nov. 9—Tutwork and surface labour cost	£2544 3 6
and wages	
29— ditto ditto	2495 4 2
Dec. 27— ditto ditto	2361 10 0
Tribute ditto	2945 11 11
Merchants' bills, &c.	518 6 1
Income tax.	200 0 0
Water rents, one year	157 18 9
Stannary dues	29 10 5
Profit	2,711 11 7
Total	£18,593 16 5
Tin ore, 260 tons 1 cwt. 0 qr. 24 lbs., for... £18,581 13 11	
Unstamped, 17 tons 3 cwt. 0 qr. 2 lbs... 802 19 3	
Arsenic	162 10 0
Deduct Mr. G. L. Basset, dues	977 7 1
Leaving	£18,569 16 1
Extra carriage of tin	3 2 6
Old stores sold	20 17 10
Total	£18,593 16 5
Dividend of 12s. 6d. per share	£2685 0 0
Balance	111 4 10 = £2799 4 10
Profit	£2711 11 7
Balance brought forward	87 13 3 = £2799 4 10
Balances in hand	£114 4 10

\* The unstamped tin ore was some stuff raised from the bottom level, which was so rich that they merely crushed it and sent it to the smelting house without stamping or dressing.]

The following report was read from the agents:—

Jan. 19.—We have commenced to sink the engine-shaft under the 314; the lode in this shaft has not been of any value for the last 80 fms. sinking, but is now worth for the length of the shaft 50' per fathom. In the 314, west of the engine-shaft, we have cut into the north part of the lode, on which we are now driving, and which is worth 40' per fathom. In the 314, east of the engine-shaft, we are driving to the south of the lode, where the ground is easier, so as to communicate with the winze under the 302 as speedily as possible; but we believe that a rich lode is standing to the north of the level, the north part of the lode 8 fms. behind the 314 end, being worth 200' per fathom. The winze under the 302, 12 fms. before the 314 end, is worth for 9 ft. long 160' per fathom. The 302, east of new east, is worth 23' per fathom. The 302, west of old sum, is worth 15' per fathom. The 290, worth for 9 ft. long 45' per fathom. The 290, east of new east, is worth 30' per fathom. The 290, west of old sum, is worth 15' per fathom. The 275, west of old sum, is worth 20' per fathom. The 265, west of old sum, is producing a little tin. The 248, east of Harriett's, is not of much value. The 248, west of Harriett's, is worth 15' per fathom. The winze under the 236, just before this end, is worth for 9 ft. long 25' per fathom. Wheal Bryant shaft, under the 236, is worth for 9 ft. long 25' per fathom. At the 236, west of Harriett's, we are still driving north to intersect the main part of the lode. The winze under the 224, west of Harriett's, is worth for 9 ft. long 50' per fathom. We are rising over the 224, west of Harriett's, and sinking a winze under the 215, east of Stray Park, on the south part of the lode, which contains a little tin, but is not of much value. The winze under the 212, west of Harriett's, is worth for 9 ft. long 40' per fathom. The 238, east of Stray Park, is producing a little tin. The 238 cross-cut, near the eastern part of Stray Park, is still being driven north to intersect the main lode.—JOSIAH THOMAS, WILLIAM PROVIS, JOHN TONKIN, JOHN BAWDEN.

The CHAIRMAN remarked that they had still to contend against the depreciated price of tin and the increased price of materials, but, in spite of these disadvantages, they considered themselves fully entitled to declare that day a dividend of 12s. 6d. per share. (Applause.) That he hoped would, under the circumstances, be considered satisfactory. (Hear, hear.) During the last twelve weeks they had raised no less than 280 tons, and sold the whole of it, and this reflected the greatest credit upon the managers of the mine, because it proved how well and earnestly they were discharging their duty. (Hear, hear.)

Mr. WARE proposed, and Mr. TREGOLIN seconded, the passing of the accounts, which motion was carried unanimously.

The Rev. J. BUTLIN proposed a vote of thanks to the agents of the mine. At the present day it was a very difficult thing for agents to stand before adventurers, but in Dolcoath their managers had good reason to be proud to do so. They had considered it insufficient to drive south, but had driven also north, and made a rich discovery of tin for them. If they looked at their tin on the surface they found brought up they found excellent means of dressing it, and instead of sending it down the Red River—(laughter)—they broke it up and sold it for 800'. (Applause.) Their agents therefore, both above and below, were entitled to their best recognition when they came before them with so good a statement. Capt. BOYNS, the manager of Wheal Owles, had told his adventurers that he did not know what to do. He had a great and grand mine, and he came before the adventurers at the end of his three months with an adverse balance of 800'. He (Mr. Butlin) could not help, therefore, congratulating himself on his 12s. 6d. dividend, although he warned the agents that he should in time to come be satisfied with nothing under 2s. (Laughter.) But in these times they must be thankful for what under ordinary circumstances would not be a fair profit. On the present occasion, however, they had an increase of 2s. 6d. over what they received at the last account, and if they had a rise in tin, a piece of good luck which did not seem at all improbable at no far distant date, he prophesied that something even more cheering would be laid before them. He could not help saying he liked Dolcoath, he had long been connected with the mine—(a laugh)—and his experience had taught him to believe that whatever the state of the tin market was it was always some comfort to be in a lode which contained plenty of tin. (Laughter.) In Dolcoath they seemed to be able to go down as far as they liked, and the deeper they got the richer were their productions. It was 600 fathoms in length, and the excellent results which had been achieved exceeded their most sanguine expectations. To the agents, therefore, were their most hearty acknowledgments due. (Applause.)

Mr. WEST seconded the motion with very great pleasure, and said he should be pleased to hear from the manager some future remarks concerning the extraordinary discovery at the 314. He had that morning seen some of the stuff under the hammer, and he had come to the conclusion that in Dolcoath they were beginning to find a new mine, and the lode that they were having from Australia would be to what fell from Dolcoath into that continent. (Loud laughter.) He was convinced that Cornish tin would yet realise its old price, for we were sure the quantities of Australian tin must fall off, and as the demand would increase, the only thing they would have to do would be to take the tin as fast as they could to the market, where ready purchasers would be found. (Applause.)

Capt. JOSIAH THOMAS, in acknowledging the unanimous vote, said the agents had every reason to believe they had the confidence of the shareholders, and knowing that they felt pleasure in serving them to the best of their ability. He was glad to meet them with an increased dividend, for in such times the matter was one of great encouragement. The average price of tin for the last three months had been 300', off their profits, but they raised more tin to supply the demand. They would notice in the report one item for unstamped tin which had come from the bottom of the mine which was so rich that they sent it to the smelters without dressing. He was very pleased to be able to inform the meeting that they were meeting with a productive lode in the engine-shaft under the 314, where they were struggling 15 years without any very profitable results, and although not very rich at present, the lode was improving, and would to all appearances continue to still further improve. From what he could judge they had now got down to a new deposit of tin, the metal was exceedingly good, better in fact than what they were accustomed to see, and it might, perhaps, as Mr. West suggested, have something to do with

Australia. (Laughter.) It seemed, however, that the nearer they got to that land the more improved their tin became, and he expected it soon to equal in quality the colonial stream metal. The western part of the mine was not looking so well, but in such an immense concern as Dolcoath some variations must of necessity be expected, and it was not impossible for improvements to occur there again. Many persons were looking forward to a prosperous year for mining—he was one of them, and with a change in positions of coals and tin he expected a great difference in the industry of the county. (Applause.)

A vote of thanks to the Chairman terminated the proceedings.

### TYRONE COAL MINING COMPANY.

The first general or statutory meeting of shareholders was held on Jan. 16, at the office of the company, Victoria Chambers, Belfast.

Mr. HENRY MATIER, Chairman of directors, occupied the chair. Amongst the shareholders present were Messrs. T. A. Dickson, J.P.; J. R. Martin, T. H. Aikin, William Wilson, Rev. J. A. Stewart, Lisburn; James Brown, Donaghmore; Thomas G. Lindsay, Wm. Gregg, John K. Boyd, Samuel M'Caughan, jun., James Barbour, Belfast; David Carmichael, Millisle; William Wood, and Alexander Walker, Armagh; C. H. Brett, solicitor of the company, and Mr. Silas Evans, the secretary.

The usual preliminaries having been disposed of, the report of the directors was submitted. They have taken possession of the properties, and commenced vigorous operations, so as to bring the collieries into active work without delay. At Congo Colliery a new shaft is being sunk to work the coal bed at a lower depth than heretofore; one pumping and one winding engine are at work. They expect that during the year the main or Five-foot seam will be laid open. At Drumglass, adjoining Congo, the new shaft is down 50 yards, at which depth the Five-foot coal was cut.

The usual preliminaries having been disposed of, the report of the directors was submitted. They have taken possession of the properties, and commenced vigorous operations, so as to bring the collieries into active work without delay. At Congo Colliery a new shaft is being sunk to work the coal bed at a lower depth than heretofore; one pumping and one winding engine are at work. They expect that during the year the main or Five-foot seam will be laid open. At Drumglass, adjoining Congo, the new shaft is down 50 yards, at which depth the Five-foot coal was cut.

The SECRETARY (Mr. Silas Evans) entered into an elaborate description of the works, the nature and extent of the beds of coal, the machinery now applied for working the mines, and the intentions of the directors regarding the future working of the collieries. From Mr. Evans's explanation it appeared that the Five-foot or top seam was a good workable coal. He illustrated this by a description of numerous collieries that he had visited in Scotland and England, and those at work in the counties of Carlow, Queen's County, and Tipperary, where beds of coal are profitably wrought, the thickness of which varies from 1 ft. to 2 ft. 5 in. He showed that the Tyrone Coal Mines would bear very favourable comparison with such works, and that the coal from the company's mines, as wrought by the improved system introduced by the new company, was a very good article for general purposes, and was evidently appreciated by the consumers, as they found even the local demand to be very far in excess of the output.

Mr. T. G. LINDSAY said he was much pleased to hear the satisfactory accounts that had been given to the meeting of the quality and quantity of coal possessed by the company. He had not the slightest idea of such a state of things existing so near at home, and he considered the directors were bound in duty to give the shareholders the information that had been given to the meeting; and further that the public should also know that such an undertaking so likely to benefit the country was in active operation in Ulster.

Messrs. Henry Matier, William Boyd, James Barbour, Thomas A. Dickson, James Brown, William Molyneux, and Joseph Moore were elected directors of the company, in accordance with the Articles of Association.

The proceedings terminated with a vote of thanks to the Chairman.

### MINING COMPANY OF IRELAND.

The half-yearly general meeting of shareholders was held at the company's offices, Lower Ormond Quay, Dublin, on Jan. 15, Mr. P. BYRNE D'ARCY in the chair.

Mr. W. HAROLD (the secretary) read the notice convening the meeting, the minutes of the preceding meeting, the directors' report, and the abstract of accounts to Nov. 30.

The CHAIRMAN, in proposing the adoption of the report and accounts, stated that at the Waterford Mine the directors had reduced as much as possible (by about 1000') the cost of production of copper ore. Twenty fewer miners are employed, and those retained do more work at the same salary. The steam-engine had been stopped, chiefly owing to the high price of coal, and a saving of 12. to 15. per month thus effected. Operations are confined to the shallow levels, but the raisings were much the same as in the previous half-year; so far they had been successful, and the manager, in his report, promised returns for the current half-year equal to those of the last from the Knocknahon Mine; his last half-year's estimate had proved accurate, and an advance in copper would give a profit. Their operations at the Ballycorus Works, county Dublin, were entirely confined to the smelting of lead and silver ore; they had a profit of 1300. on lead smelting, and a loss of 2000. on silver, leaving 700. net loss. The loss was chiefly on Bolivian ores, for which they had contracted; they had hoped to make 27s. to 30s. per ton upon them, but the most experienced men in the kingdom had been deceived by them. Their collieries in the South of Ireland were promising well, and the Great Southern Railway line would soon be completed to the Ballycorus Works, county Dublin, and the 302, 12 fms. before the 314 end, is worth for 9 ft. long 25' per fathom. The 290, west of old sum, is worth 15' per fathom. The 275, west of old sum, is worth 20' per fathom. The 265, west of old sum, is producing a little tin. The 248, east of Harriett's, is not of much value. The 248, west of Harriett's, is worth 15' per fathom. The 236, east of new east, is worth for 9 ft. long 25' per fathom. The 236, west of old sum, is worth 15' per fathom. The 238, east of Stray Park, is producing a little tin. The 238 cross-cut, near the eastern part of Stray Park, is still being driven north to intersect the main lode.—JOSIAH THOMAS, WILLIAM PROVIS, JOHN TONKIN, JOHN BAWDEN.

The CHAIRMAN remarked that they had still to contend against the depreciated price of tin and the increased price of materials, but, in spite of these disadvantages, they considered themselves fully entitled to declare that day a dividend of 12s. 6d. per share. (Applause.) That he hoped would, under the circumstances, be considered satisfactory. (Hear, hear.) During the last twelve weeks they had raised no less than 280 tons, and sold the whole of it, and this reflected the greatest credit upon the managers of the mine, because it proved how well and earnestly they were discharging their duty. (Hear, hear.)

Mr. WARE proposed, and Mr. TREGOLIN seconded, the passing of the accounts, which motion was carried unanimously.

The Rev. J. BUTLIN proposed a vote of thanks to the agents of the mine. At the present day it was a very difficult thing for agents to stand before adventurers, but in Dolcoath their managers had good reason to be proud to do so. They had considered it insufficient to drive south, but had driven also north, and made a rich discovery of tin for them. If they looked at their tin on the surface they found brought up they found excellent means of dressing it, and instead of sending it down the Red River—(laughter)—they broke it up and sold it for 800'. (Applause.) Their agents therefore, both above and below, were entitled to their best recognition when they came before them with so good a statement. Capt. BOYNS, the manager of Wheal Owles, had told his adventurers that he did not know what to do. He had a great and grand mine, and he came before the adventurers at the end of his three months with an adverse balance of 800'. He (Mr. Butlin) could not help, therefore, congratulating himself on his 12s. 6d. dividend, although he warned the agents that he should in time to come be satisfied with nothing under 2s. (Laughter.) But in these times they must be thankful for what under ordinary circumstances would not be a fair profit. On the present occasion, however, they had an increase of 2s. 6d. over what they received at the last account, and if they had a rise in tin, a piece of good luck which did not seem at all improbable at no far distant date, he prophesied that something even more cheering would

lode had been struck, which it might be expected to reach in about 60 ft. further driving; and that the cross-cut west, at that level, had been driven 156 ft., and would be pressed forward until the western lode had been struck. At the 650 ft. level the western lode has been opened up a considerable distance, the quartz taken from which has yielded well; 4718 tons from the stoves averaged 9 dwt. per ton, and 1546 tons from the drives gave nearly 6 dwt. per ton. This latter included quartz from the broken-up part of the lode north; excluding this, the average was 7½ dwt. per ton.

The reserved fund, amounting to 53681. 5s., is invested in Victoria Government five per cent. debentures. There are no liabilities in England, excepting the amount charged for directors' fees, which have not been taken, and those in the colony are for the current monthly working expenses. The revenue account to Dec. 31 shows a balance to its credit of 18521. 12s. 2d. A draft for 30000. has been drawn upon the directors to enable Mr. Bland to pay the company's proportion of the losses incurred on the mining operations during the early part of the year. Including this sum the operations of the company in the colony show a loss for the year of 17531. 2s. 6d. The directors regret they are unable to recommend a dividend.

#### VICTORIA (LONDON) MINING COMPANY.

A general meeting of the shareholders is to be held on Thursday. The report to be submitted states that the sum of 112. 3s. 4d. paid on Barford mining account has been written off against capital, and the remaining investments of the company are represented by the sum of 71901. 2s. 5d., and divided as follows:—South Clunes Company, 49851. 12s. 5d.; Prince of Wales Company, 16921.; United Albion and Prince of Wales Company, 2021. 10s.; London and Melbourne Company, 3901.; total 71901. 2s. 5d.

#### GENERAL BRAZILIAN MINING COMPANY.

The adjourned special general meeting of proprietors was held yesterday at the London Tavern,—

Mr. A. W. YOUNG, M.P., in the chair.

The notice convening the meeting having been read, The CHAIRMAN rose and said: Well, gentlemen, you remember about a month ago we met, it was, I think, on Dec. 19, and that on that occasion you thought it worth your while to authorise the directors to advertise for more money. They took into consideration in what shape it should be done, and they thought it the most likely—in fact, that the only way would be to issue some more 15 per cent. debentures. A circular has been sent to every shareholder, and advertisements have been put pretty freely in the papers, but the response is so ridiculously small that the directors thought it right to return the deposits. Therefore, that mode of carrying on the mines has failed. Now, the question is what will you do? There is about 30000. in the bank, and the mine at present is being worked in a very small way that produces nearly enough to cover its own expenses. Under those circumstances is it your pleasure that you should go on with the small modicum of capital you have in hand? If nothing good is struck in a short time it is obvious that that outlay will be a useless expenditure of your money, and that the mine will be of no more value than now. Or is it your pleasure to try to pass a resolution for liquidating the concern? And if so, I may state that you will have to appoint a gentleman to carry that business out, who is officially called a liquidator. That is, immediately you pass such a resolution you understand the directors' powers cease, and the liquidator takes possession of all the property. But in this instance the property out in Brazil, the land itself, the mine is mortgaged, that is especially hypothecated to certain gentlemen who hold bonds, The property out there has been put in the name of trustees for those gentlemen who hold the bonds; but as they are creditors likewise of the company would be entitled supposing that the mines themselves did not fetch enough to pay them principal and interest—they would be entitled to everything here, including this bank balance. Therefore, unless this property can be sold to pay more than the sum standing against it for these debenture holders, practically the shareholders of the General Brazilian Company have no further interest in the matter, because they will get nothing. I think you must really all understand the position in which we are, and as I do not think it is for me to suggest what should be done, I shall leave the shareholders present to move a resolution in any sense they like, and it will then be my duty to put it from the chair. Now, although as I have said I do not wish to influence the meeting with the views I hold, still I have an opinion of my own, and I have no objection to state it, but I do not desire that that should influence any gentleman present in coming to a decision on the matter. My opinion is that having gone so far, it is hoping against hope to believe that the sum of 30000. is enough to develop a good mine. Of course it is on the cards that it might prove sufficient, but the chances are, I think, decidedly against it, and then it is not to be forgotten that the trustees of the debenture-holders, when the interest becomes due and is not paid, will probably be set to work by the debenture-holders and then in all probability they will come down on the property in an adverse way, whereas if we assume the initiative and appoint a liquidator who knows the country, and who knows the proper people to apply to, there is just this chance that a purchaser might be found who would give more than the mortgage debt—in that event there would be something to come to the shareholders. At any rate I think the Brazilian market might be tried before the property was absolutely disposed of. The solicitor will draw up a resolution in any sense that is thought best by the meeting, either that you wind up, or that you go on. We shall be better able to judge and decide on that point after any gentleman present ventilates the subject.

Mr. BURNAND was not at all surprised that the company had not succeeded in securing a large amount of subscription, for he believed the property would not realise more than just sufficient to cover its present indebtedness. How then, could they expect to raise 30,000., upon a property which was already mortgaged to its full value? Under the circumstances he was of opinion the only course open to the shareholders was to resolve on an immediate liquidation of the company's affairs. Mr. Burnand then handed in to the Chairman a motion to that effect. Before that was put, however, he desired to refer to the situation in which the company stood at present. Unless they placed their property in the hands of a liquidator, officially authorised to protect the shareholders' interests, he thought they stood a very small chance of getting anything. If, on the other hand, they did not put their affairs in liquidation, and they carried on with the very small sum they had in hand—a sum ridiculously small for a purpose of this kind—there would be only the inevitable result for another six months. They must do one thing or the other—either wind up or act, and they could not act efficiently with their present available means, therefore the only course that appeared opened to them was to wind up. He felt sure they would not realise 30,000., from the sale of their property, and he thought they would find it a very difficult thing even to pay off their debenture debt.

After some further discussion, the resolution submitted by Mr. Burnand was amended, and moved by that gentleman as follows:—"That it has been proved to the satisfaction of this meeting that the company cannot by reason of its liabilities and the indisposition of the shareholders to advance further funds continue its business, and that it is advisable to wind-up the same, that the company be therefore wound up voluntarily."

The CHAIRMAN intimated that as this was an extraordinary resolution it would not be necessary to confirm it; the decision of the shareholders that day would, therefore, be final.

Mr. DUNCAN seconded the motion, which was then put and carried unanimously. A prolonged and tedious discussion then ensued as to the appointment of liquidators, in the course of which Messrs. Burnand, Rogers, and others addressed the meeting. Eventually, it was resolved that Messrs. Hardie and A. W. Young, M.P., be appointed to act with the trustees (Messrs. Blyth and Atwool), as liquidators of the company, and that their remuneration be 300 guineas.

Mr. BURNAND suggested that the liquidators should avail themselves of the valuable services of Mr. Tregillis (son-in-law of Capt. Treloar), who was about to proceed in the realisation of the company's property.

This suggestion was concurred in by the board, and it was resolved to employ Mr. Tregillis as an agent of the liquidators.

Mr. BURNAND, in moving a vote of thanks to the Chairman, expressed the hope that, after the liquidation of the affairs of the General Brazilian was completed another company would be formed, under the title of the Santa Anna Gold Mining Company, in which case he should feel disposed to invest 1000. in the development and exploration of their old property under a new name. (Hear, hear.) The resolution having been passed the proceedings were brought to a close.

**IBSTOCK COLLIERY COMPANY.**—At a meeting of the directors of this company, held at the offices, Fenchurch-street, on Thursday, an interim dividend of 6 per cent. was declared for the period from the formation of the company to the end of last year, leaving 1850. to be carried forward.

**WHEAL BASSET.**—At a general meeting of shareholders held at the mine on Wednesday, Mr. Rosewarne, of Godolphin, presiding, the accounts showed a debit balance of 25321. Capt. Trevena stated that no tin ore had been sold since the last meeting, and the 70 tons credited had been stocked. Dr. G. A. Michell having resigned the chairmanship, the best thanks of the meeting were presented him, and it was resolved that Mr. Richard Martin, of Redruth, should be appointed his successor. The agents, Capts. W. C. Trevena, J. Opie, and W. Reynolds, after describing the various points of interest in the mine, stated:—"We are pleased to inform you that during the past three months the mine has continued to open out beyond our expectation, which has enabled us to return our usual quantity of tin, and a very great reduction in the labour cost and merchants' bills, which will appear in our next account; and, looking at the increasing quantity of the ground we are laying open monthly, we have every confidence that we shall soon be able to wipe off the debt on the mine."

**LEVANT.**—At a meeting of adventurers, held at the mine on Jan. 13, the accounts showed a debit balance of 2248. 19s. 7d. A call of 15s. per share was made. Capts. H. Boys and J. Thomas say—"During the past four months we have opened in levels and veins 64 fms. 0 ft. 7 in., and cross-cuts 6 fms. 2 ft. 9 in. We have 27 paces stoning on turfwork for tin and copper, and 15 pitches working on tributes varying from 12s. to 18s. in 1'. Our man-engine to raise and lower the miners will be completed in another week; this will greatly facilitate the labour part of the mine. The machinery is now almost complete, and our attention in future will be more particularly directed to the development of the mine and the raising of mineral; the sales of which will now materially increase. We consider our prospects very encouraging, and we have still the same opinion as to the ultimate success of the mine."

**GRAT ROCK.**—A special meeting was held on Wednesday—Mr. Peter Watson in the chair. A resolution was passed that, in consequence of being unable to pay its liabilities, the company be wound up voluntarily. It was understood that the mine and plant would be offered for sale as a going concern.

**GWYDYL PARK CONSOLIDATED MINING COMPANY.**—An extraordinary general meeting of shareholders was held on Thursday.—Mr. W. S. Sutton in the chair. It was unanimously resolved that the capital of the company should be increased by the issue of 12,000 shares of 6s. each, bearing a preferential dividend of 20 per cent., such shares to be offered *pro rata* to the present members, in proportion to the existing shares held by them. The report appears in another column. A special meeting will be held on Feb. 12 to confirm the above resolutions. It was mentioned that the lode is now worth 2 to 3 tons per fathom. The directors, who have full confidence in the mine, intend to take up the shares they are entitled to. The lead ore sold since June, 1871 from the Tintwistle Mine, worked

under the disadvantages of a short supply of water, produced 15441., and supposing the whole capital of 36000. now proposed to be raised, should be required, the profit necessary to pay 20 per cent. would amount to about 600. per month, and any profits beyond that would be shared by ordinary and preference shares alike. A vote of thanks to the Chairman closed the proceedings.

**NEW GREAT CONSOLS.**—From the general setting of this mine, published in the Journal of last week, a fair comparison can be drawn by any practical miner—or, indeed, by anyone who is not—between the statements in the extraordinary letter of "G. W." after a personal inspection, and the actual returns. In that letter it is stated that "every man should break 300. worth of tinstuff monthly." Now, according to the setting referred to, there are considerably over 100 men employed underground, all of them working in productive bargains, consequently the present returns should realise over 3000. per month, or something like 40,000. per annum. What has "G. W." to say to this?

#### AUSTRALIAN TIN ORE SOLD IN LONDON on Jan. 20.

Qty.	Price.	Purchasers.	Qty.	Price.	Purchasers
ewts. £ s. d.			ewts. £ s. d.		
9... 67 15 0	1 Bolitho and Sons.	53... 58 2	6... R. R. Michell and Co.	61... 67 15 0	Ditto.
80... 61 0 0	Ditto	61... 67 15 0	R. R. Michell and Co.	47... 68 10 0	Redruth Smelting Co.
16... 67 15 0	Ditto	47... 68 10 0	Redruth Smelting Co.	70... 69 5 0	Tregoning and Co.
27... 61 0 0	Ditto	70... 69 5 0	Tregoning and Co.	27... 70 10 0	Ditto.
70... 70 10 0	Ditto	5... 73 0 0	Ditto.	38... 70 10 0	Ditto.
68... 67 0 0	Ditto	38... 70 10 0	Ditto.	32... 72 0 0	Ditto.
30... 70 0 0	Ditto	43... 72 0 0	Ditto.	43... 72 0 0	Ditto.
130... 71 5 0	Ditto	45... 70 0 0	Ditto.	45... 70 0 0	Ditto.
105... 72 0 0	Ditto	49... 70 0 0	Ditto.	166... 71 5 0	Ditto.
60... 61 19 0	Ditto	120... 67 15 0	Charlestown Smelt. Co.	166... 71 5 0	Ditto.
89... 30 0 0	Ditto	88... 65 0 0	Ditto.	120... 67 15 0	Charlestown Smelt. Co.
21... 10 0 0	Ditto	162... 70 0 0	Ditto.	88... 65 0 0	Ditto.
24... 46 0 0	Ditto	37... 72 0 0	Ditto.	140... 70 10 0	Redruth Smelting Co.
42... 72 15 0	Ditto	37... 42 10 0	Ditto.	94... 71 5 0	Ditto.
60... 72 15 0	Ditto	21... 2 10 0	Ditto.	5... 65 0 0	Ditto.
47... 71 5 0	Ditto	91... 71 5 0	Ditto.	176... 66 10 0	Ditto.
14... 72 0 0	Ditto	33... 51 15 0	Ditto.	200... 70 10 0	Ditto.
35... 69 5 0	Ditto	40... 65 0 0	Ditto.	120... 67 15 0	Charlestown Smelt. Co.
103... 67 15 0	Ditto	73... 75 0 0	Ditto.	88... 65 0 0	Ditto.
137... 69 5 0	Ditto	140... 70 10 0	Ditto.	162... 70 0 0	Ditto.
167... 68 10 0	Ditto	61... 65 0 0	Ditto.	37... 72 0 0	Ditto.
140... 70 10 0	Ditto	200... 67 17 6	Tamar Smelting Co.	140... 70 10 0	Ditto.
101... 71 5 0	Ditto	37... 71 15 0	Ditto.	140... 70 10 0	Ditto.
202... 70 0 0	Ditto	94... 67 17 6	Ditto.	140... 70 10 0	Ditto.
30... 67 0 0	1 Bolitho and Sons.	43... 49 0 0	Charlestown Smelt. Co.	43... 49 0 0	Charlestown Smelt. Co.
79... 67 0 0	1 Calenick Smelting Co.	100... 71 10 0	Ditto.	100... 71 10 0	Ditto.
	1 Tamar Smelting Co.	168... 70 0 0	Ditto.	168... 70 0 0	Ditto.
	1 Bolitho and Sons.	120... 71 0 0	Ditto.	120... 71 0 0	Ditto.
230... 71 5 0	1 Calenick Smelting Co.	20... 66 10 0	Ditto.	20... 66 0 0	Ditto.
	1 Daubuz and Co.	20... 66 10 0	Ditto.	20... 66 0 0	Ditto.
105... 72 0 0	Williams, Harvey, & Co.	43... 49 0 0	Charlestown Smelt. Co.	43... 49 0 0	Charlestown Smelt. Co.
130... 67 15 0	Ditto	59... 67 0 0	Ditto.	59... 67 0 0	Ditto.
12... 49 0 0	Ditto	53... 69 5 0	Ditto.	53... 69 5 0	Ditto.
31... 67 0 0	Ditto	155... 68 2 6	Ditto.	155... 68 2 6	Ditto.
124... 68 10 0	Ditto	302... 71 0 0	Ditto.	302... 71 0 0	Ditto.
201... 69 5 0	Ditto	45... 71 0 0	Ditto.	45... 71 0 0	Ditto.
40... 66 10 0	Ditto	42... 64 0 0	Ditto.	42... 64 0 0	Ditto.
160... 70 5 0	Ditto	120... 71 7 6	Ditto.	120... 71 7 6	Ditto.
55... 71 5 0	Ditto	200... Not sold		200... Not sold	
16... 49 0 0	R. R. Michell and Co.	200... Not sold		200... Not sold	
17... 48 17 6	Ditto	200... Not sold		200... Not sold	
8... 47 7 6	Ditto	250... Not sold		250... Not sold	
30... 17 10 0	Ditto	280... Not sold		280... Not sold	
99... 72 15 0	Ditto	255... Not sold		255... Not sold	
65... 72 15 0	Ditto	786... 786 800		786... 786 800	

#### EACH COMPANY'S PURCHASE.

Bolitho and Sons .....	Tons 105 7	Redruth Smelting Company .....	Tons 43 2




<tbl\_r cells

able, and will not admit of concentration by the old washing method. When ores produce 4 or 5 per cent., violent efforts are made against the laws of Nature to concentrate them to 7 or 8 per cent.; and the whole of the noted mining captains who ridicule my doctrine confess that thousands upon thousands of pounds worth of copper have passed away from our dressing-floors into the rivers. This 1 to 2 per cent. of material, therefore, constitutes the immense burrows of waste rubbish generally seen upon a mine, or is left underground wherever the raising of it can be shirked, and only the ores over 2 to 3 per cent. and upwards find their way into the smelter's hands, with naturally more profit to the smelters than to the mine-adventurers.

It is a well-known fact that 1 per cent. tin and 5 per cent. lead are not discarded, and why? Simply because the specific gravity of tin and lead admit of concentration by the process of washing, which is as old as the hills, and known by every miner. I maintain that the real mineral wealth of England has never been recognised; aye, that the shadow has been grasped at, and the real quantitative substance ignored through nothing more nor less than blind ignorance, endorsed by obstinate prejudice. We will now take 1 per cent. copper ore containing 6 ozs. of silver per ton, which exists in discarded unlimited quantities throughout Devon and Cornwall; and although smelters cannot buy it in its present state, I can by a most simple process make it of great value and profit. The aim is concentration, which is the secret of successful mining; and in order to produce 1 ton of 70 per cent. copper 70 tons of 1 per cent. are required (of course, a little more in practice, as there must be some waste), and the 70 tons containing 6 ozs. of silver make the 1 ton of 70 per cent. copper give a yield of 420 ozs. of silver—a mere value of 160/- to 170/-, but say only 140/-, and it is 2/- per ton for the 70 tons treated. In the matter of dressing lead the lead is simply concentrated by its own weight, and no action whatever occurs to the remaining portion of the lode dressed, but by the chemical process every grain undergoes a change; and as the 6 ozs. of silver are disseminated through the 1 ton, or 2240 lbs. of lodey matter, and not merely in the 1 per cent., or (say) 22 lbs. of copper, it must be clear to your readers, unless they are either deaf, dumb, blind, or silly, or the happy quartette combined, that silver has by far, and especially under a chemical treatment, a greater affinity for copper than lead. Of course, I am well aware that to gain a real success the final results must mean real profits, and this all-important point is highly satisfactory, since the average of the country for tin is only 20 lbs. to the ton, worth 15/-, and my patent process of extracting silver and copper is far cheaper than dressing tin when carried out upon an extended scale. I am now addressing the wide, wide world, and emphatically pronounce that the whole of the lodes in the Tavistock district average 1 per cent. copper, 6 ozs. silver, and 8 lbs. tin, apart from the rich deposits which now and then occur to wit, Devon Great Consols, Wheal Friendship, and many other mines, but understand many of the known mines produce 2 per cent. copper, 8 ozs. silver, and 20 lbs. tin, and these figures are below the actual facts.

I stake my "skill and reputation" upon every statement. Nay, cease those idiotic smiles, and listen to the explanation. Some of the very first chemists of the day have condescended to visit the works at Wheal Barnard, and are infatuated with the novelty, and perfectly satisfied that I am right. This means that the race of one man against the whole world is run and won. Look at Clitters, where a hook, and because there is some little difficulty in landing the two we have of nothing but weeping, and wailing, and gnashing of teeth. The great trouble of the day is that one mineral interferes with the dressing and sale of the other—"the heart bowed down by weight of woe." But "lookeye, look! look! another bale! all on the same hook!" a silver fish this time. Call a meeting. Chair, chair, hooray! Gentlemen, this is indeed most disastrous; we are perfectly willing to welcome one mineral, and would do our utmost to combat with two, but the three are above our comprehension, and beyond precedent. I therefore, after a full digestion of the complicated state of circumstances, propose to "knack the bal." Seconded and carried. Such is life. And if a limited company happens to be summarily wound up, as has been the case, for having several minerals in combination, with a lack of science to separate them, the poor unfortunate creditors have often to be satisfied with 10s. in the pound; but no doubt some of the merchants, like members of the Israelitish persuasion, can outwardly show their teeth, and at the same time inwardly pocket the affront, knowing that even 10s. in the pound means 50 per cent. profit. I, however, am dressing, and must, in conclusion, hurriedly exhort your readers, one and all, to have perseverance, "skill and reputation," with faith hope, and charity.

THOS. J. BARNARD.

Abbey Mount, Tavistock, Jan. 21.

#### MR. N. ENNOR AND THE CORNISH CAPTAINS.

SIR,—I would remind Mr. Ennor that whatever Cornish mine captains are, and whatever their knowledge of mining may be, they are not likely to be "benefited much by reading what emanates from his pen, and appears in your valuable Journal week after week. If he would descend from that lofty eminence of self-conceit and bragga-doo to the same level as other mortals, and throw out some practical hints on mining that would raise a discussion likely to prove beneficial to the public, I think he would find many a Cornishman to meet him half-way, and be six to his dozen, in spite of all his gloomy dreams of their ability, honesty, &c. Or does he intend (wonderful being as he is), possessing the secret of all mining knowledge in himself—Nature's laws and freaks, how to find good bals, how to save tin from the Red River, &c.—to retain his secret until he departs from this earth, of which he appears to know every inch, and then cast his mantle on some poor Elisha to preserve and perpetuate Ennor's astounding mining knowledge to coming generations? We remember some little time ago that Mr. Ennor boasted of having been consulted on some subject by, I think, Stephenson and some others of note. I would ask him, was he ~~ever~~ consulted the second time by the same person on any important subject?

OLD TREBURGETT.

#### MINING PROPHETS, AND MINING ENTERPRISE.

SIR,—For some time past we have been favoured in the Supplement to the Journal with some letters from Messrs. Tredinnick and Co., on Mining Enterprise, Prognostications of Mining, &c. Now, as I happen to be rather largely interested in some of the mines Mr. Tredinnick has in those letters expressed disapproval of, I must say that at first sight they created in my mind no small amount of alarm. Remembering, however, that I had seen Mr. Tredinnick's name in the Journal on former occasions, I thought it might be worth while to examine some of his former predictions, and see how they have turned out:—

On June 3, 1871, in your Journal, Mr. Tredinnick, writing of Harmony and Montague, says "The extent of the levels opened in search of copper ore renders this mine all but a competitor to Dolcoath and Tintoret. We are much mistaken if upon the practical working of the properties the result established do not equal the best and most valuable ones in the West of Cornwall. It should be remembered that the Harmony and Montague possesses thousands of fathoms of ground laid open in search of copper that can now be wrought at profit for tin, and without the cost of development."

In Supplement to the *Mining Journal*, July 8, 1871, Mr. Tredinnick writes—"Trannack, West Jewell, East Pool, and West Chiverton ought to be purchased." At that time the market value of East Pool was 14/-, now 9/-; West Chiverton was 2/- per share, now 5/-; Trannack and West Jewell, after expending 13/- per share, and 2/- respectively, are now nowhere. At the same date, also in Supplement, Mr. Tredinnick says "Harmony and Montague, abandoned for copper, have proved wonderfully rich for tin under the management of Capt. Stephens, controlled by the supervision of Mr. Sparge, of Gresham House, and is likely to develop itself into a great and prosperous property. The quantity of tin left standing in the old workings is beyond calculation. At West Jewell success likewise attends the re-opening of an old abandoned copper mine; the tin is exceedingly rich, and the quantity at present, though unascertained, is proved to be considerable, and daily discoveries have been made of rich and paying deposits." Since this was written, Harmony and Montague have collapsed in disgrace, without having sold any tin, and West Jewell has shut up except above the adit level.

In the Supplement of August 12, 1871, Mr. Tredinnick writes—"In Cornwall, again, is North Pool, upon which 25,000s. have been expended, and a considerable capital remains to protect the future. Shares can now be purchased at much advantage to incoming investors." What has North Pool done since?

August 26, 1871, Mr. Tredinnick writes—"Wheat Lucy appears to be a certain prize; the shares are few in number, and the large majority well held. Those floating about the market will soon become absorbed." Yet this "certain prize" has succumbed in the year just past, and been sold for the value of materials.

In Supplement to *Mining Journal*, January 6, 1872, Mr. Tredinnick recommended, "amongst the numerous undertakings well worthy the attention of the investing capitalist, Bassett, South Frances, South Carr Brea, Spear Moor, West Trumpet, North Pool, Pendarves, New Hinstone, Buller, Lucy, and North Buller." At that time Bassett shares were saleable at 15/-, now (say) 35/- only; South Frances, then 65/-, now 13/-; South Carr Brea, then 8/- 10s., now 3/-; Spearne Moor, then 18/-, now nominal; Pendarves, then 50/- per share, since collapsed with great loss; Buller, then saleable at 32/-, since knocked, and the others in the list, not worth figuring into.

In Supplement to *Mining Journal*, May 11, 1872, after having called attention to his list of dividend mines, among which he thought worth of notice Castle-an-Dinas, Pendarves United, Poldice, Terras, and Killy (Leant). Mr. Tredinnick writes as follows—"In addition to the above mines there are others especially worth attention, as for instance South Crofty, Wheal Mount, East Bassett, Lovell, New Rosewarne, North Pool, North Roskear, Penhreal, Par Consols, West Bassett, West Jewell, West Tolgus, Wheal Lucy, and Penhreal." We ask where would an investor purchasing into the majority of the above have been landed? Let us see: South Crofty was then marketable at 10/- per share, now 30/-; Wheal Mount, then quoted 11/- to 11/- 10s., now nowhere; East Bassett, then 32/-, now 10/-; Lovell appears depreciated in value, only about one-third; New Rosewarne, then 9/-, now 7s. 6d. per share only; North Pool, then 3/-, now 15/-; North Roskear, then 40/- per share, now 3/-; Penhreal gone off about one-half; Par Consols gone altogether; West Bassett from 17/- per share to 9/-; West Tolgus from 80/- per share to 27/- It seems pretty clear to us that Mr. Tredinnick's clients would not have got off without considerable loss.

In the Supplement to *Mining Journal*, May 18, 1872, Mr. Tredinnick's letter reads thus—"Trumpet Consols is a sound investment; it has been at work for above a quarter of a century, and is now paying 2000/- quarterly; the future is full of promise. Adjoining is a mine called Wheal Mount, the shares in which are selling at 11/- to 12/- per 12000/-; the circumstances under which this property is introduced to the public lead me to anticipate a rapid advance in the price of shares, whilst the prospects are all that can be desired. All that is necessary is to open up the lodes, as their yield is already established."

August 10, 1872: After a glowing description of the Bassett, Bullers, Crofty, Tolguses, Roskears, Setons, Dolcoath, Tincroft, Carn Brea, West Frances, Treasavean, &c., in Mr. Tredinnick's letter, he proceeds thus—"The veins almost invariably at their junction with the magnetic currents in the cross-courses form rich and lucrative deposits of minerals, and as these extend into the Trumpet Consols and Wheal Mount Tin Mines, and the lodes are already proved to be exceedingly productive, we can, with every confidence in the future, invite attention to this property, which is so fully described and certified in the reports of practical mining and local authorities, that little doubt can be entertained that the Wheal Mount Tin Mine will soon become a prize of great and exceptional importance."

January 11, 1873, Mr. Tredinnick writes—"Trumpet Consols, paying 8000/- a-year dividends, is one of the cheapest tin mines in Cornwall, at 15/- per share; it pays 13 1/4 per cent. interest. The mine is wholly free from market excitement, the shares being mostly held by local capitalists. The dividends for 1872 were 35 per cent. on the capital, and for the current year they will probably augment." On same date he says "West Trumpet we are now inducing our friends into. The company con-

sists of 32 shares of 125/- each, and upon subdivision greatly enhanced value will unquestionably become established."

Even as late as June, 1873, Mr. Tredinnick classes Trumpet Consols as one of the mines of undoubted value, and on August 9 he discovers that it is 5200/- in debt. Is it not singular that a man whose prognostications have been so uniformly erroneous should still believe, or affect to believe, that he has the gift of prophecy? All your readers can prove my statements by reference to your columns, so they are not asked to take anything for granted, as I have given dates to enable them to refer without any trouble. Such writers as these are doing much mischief every way, as they induce capitalists to buy up at high prices shares which are sometimes entirely worthless, and they discourage the carrying out of *bona fide* mines of the highest prospects, because they cannot see a chance of performing a *trick* in the shares, and pocketing the balances produced by rapid fluctuations. The more thoroughly this system is enquired into and exposed the better for the capitalist, and for the proper development of the mines.

THE TRUTH.

#### BARYTA—ITS MANIFOLD USES IN THE ARTS.

BY DR. LEWIS FEUCHTWANGER.

The various salts of baryta have long been employed in pyrotechnics; as admixture to white lead; as material almost indispensable to card makers for a permanent white; in sugar refining; in chemical operations, &c.

In nature we find but few varieties. The sulphate, composed of 66 per cent. baryta and 34 per cent. sulphuric acid, is abundant in England, France, Germany, and the United States, where it most generally is found in connection with beds or veins of metallic ores, as gangue, or veinstone. Sometimes, however, it forms distinct veins, in company with the secondary limestone, and very often in fine crystals, along with calcite and celestine. Crystals of large dimensions occur in Westmoreland, Cornwall, Cumberland, and Derbyshire, in England. Beautiful specimens of septaria, cut and polished for table and other ornaments, having linings of brown heavy spar, are wrought in Durham, England, in Hungary, at Freiberg in Saxony, Clausthal in the Hartz, in Bohemia, and in Auvergne, France. The localities in the United States are very numerous. The States of Connecticut and Missouri have long furnished abundant material for the arts. Next come Virginia, New York, New Hampshire, Massachusetts, Pennsylvania, Kentucky, and Tennessee. In Canada, fine crystals occur, and massive baryta in a 27-ft. vein. It is reported from New Mexico also.

The Bologna spar is the ornamental stone, of a brown colour and concentric rings, originally found in a bed of clay near Bologna, where it formerly was considered a great curiosity, on account of its phosphorescence, displayed after heating with charcoal, and it was called the Bologna phosphorus. The common name of sulphate of baryta is heavy spar, or barytes; specific gravity 4.5, and hardness 3. It is found in nature in large crystals, weighing 100 lbs. and more, and in slender needle crystals; also in massive aggregations of tubular crystals; likewise columnar and radiated, and in globular and nodular concretions; also lamellar and granular, earthy and stalactitic.

The sulphate of baryta often occurs associated with lime and some silica and alum, and is then called calcareous; and if it is associated with strontia it is called baryto-celestine. If the sulphate of baryta gives out a fetid odour on striking or rubbing it is called fetid baryta.

Witherite is a carbonate of baryta, having a specific gravity of 4, and a hardness of 3.2, and consists of 78 per cent. baryta and 22 per cent. carbonic acid. This mineral is found in considerable quantities in England at Alston Moor, in Northumberland, in Silesia, Hungary, Styria, Sicily, Chili, but not much in the United States. It is extensively employed in the manufacture of plate-glass and the manufacture of beetroot sugar in France, and for the production of blanc-fix, or permanent white. It is much used of late for paint, particularly in combination with soluble glass and white oxide of zinc.

The metallic base of the baryta salts is called barium, and is obtained from the carbonate of baryta, or chloride of barium, if put in a platinum dish and connected with the positive pole of a strong galvanic battery, in order to decompose it, mercury being placed in a hollow made in the baryta and connected with the negative pole. The result is an amalgam, which may be distilled in a bent tube filled with hydrogen. Barium is a white, malleable, and fusible metal, which oxidises easily in the air and decomposes water at common temperature. For the purpose of obtaining the pure baryta or barium oxide the nitrate is calcined at a red heat in a silver or porcelain crucible, or the carbonate is mixed with pulverised charcoal in a covered crucible, and then exposed for an hour to a strong heat. If oxygen gas is passed over it, it will absorb that gas with avidity, and become a peroxide. This is the substance used at the present day for the production of the peroxide of hydrogen, which is much recommended as a medical re-agent, and employed in the arts for bleaching animal tissue, or converting brown into blonde hair. To prepare it, the peroxide of barium is treated with hydrochloric acid, and the liquid is quickly evaporated to syrupy consistency, when it yields a slight chlorous odour. It decomposes easily into water and oxygen, and it is, therefore, almost impossible to prepare it properly in hot weather. At 212° Fahr. it decomposes with violence.

The oxide of barium, or caustic baryta, unquestionably rivals in causticity with potash, soda, and ammonia, and may be easily employed in the compounds with chromic acid.

The chloride of barium is obtained by fusing the sulphate of baryta, or native heavy spar, with chloride of calcium (the residue from the preparation of ammonia) in a reverberatory furnace, and subsequently extracting with hot water, leaving the sulphate of lime undissolved.

The chlorate of baryta, which is now extensively used for producing a pure green flame in the manufacture of fireworks, is prepared by dissolving the artificial carbonate of baryta in caloric acid solution, when it forms beautiful shining tabular crystals. It is dangerous to keep it on hand when mixed with charcoal or sulphur.

Nitrate of baryta, which is likewise used in fireworks, may be easily prepared by dissolving the native carbonate in nitric acid, and evaporating the solution, whereby octahedral crystals of the native are deposited.

The native sulphate of baryta is generally used for the adulteration of white lead or paint, to the extent of 25 to 50 per cent. Of this mineral 4000 tons are produced annually in Connecticut, and 2000 tons in Missouri, while 10,000 tons are imported from England and Germany. The native mineral, if very white and free from iron coating, is finely ground and dressed with water. But most of the native mineral contains fine particles of iron, and hence requires a different treatment—calcination for some hours, in order to oxidise the iron to a higher degree, when hot water, and, if necessary, a little sulphuric acid, will take up all the iron, and a beautiful white heavy powder is deposited, which is then dried, either by steam or in the same manner as white lead, in the atmosphere. White oxide of zinc, as well as white lead, may be mixed with sulphate of baryta in linseed oil to a pigment, which is then fit for indoor and outdoor painting, and spreads well.

The artificial sulphate, called white or blanc fix, which is now largely manufactured in France, England, and the United States, is used in the manufacture of a paper of the purest white, in imitation of linen, and used for cheap collars, skirts, and cards. It was formerly manufactured from the native carbonate of baryta, but is now prepared from chloride of barium, which is obtained in England as a waste product at a reduced price. This is decomposed with sulphate of ammonia and a pure sulphate of baryta is precipitated. Another process for obtaining the chloride of barium, in order to prepare the permanent white, is by decomposition of the native sulphate of baryta with chloride of sodium, in a strong fire, and the subsequent solution of the fused mass in boiling water. The result is chloride of barium and sulphate of soda or glauber salt. About 5000 tons of permanent white are annually manufactured in this country and Europe.

In the chemical laboratory the barium salts are indispensable for the determination of sulphuric acid, which forms the sulphate as an insoluble precipitate. The carbonate of baryta is a strong poison to animals, and is used for killing rats, &c.

A green paint, composed of manganese and caustic baryta, under the name of manganese green, has been brought to market from abroad, but was soon superseded by the beautiful Guignet green, a composition of analine and iodine.

The best sugar refiners of France have very successfully employed both caustic baryta and the carbonate in their operations. They treat, first, the saccharine juice with lime, and then with carbonic acid, in order to clarify it. Afterwards, they add the baryta in order to obtain an insoluble precipitate, a saccharate of baryta. After passing sufficient carbonic acid gas under a pressure of about half an atmosphere upon this precipitate, a separation takes place, and without any evaporation the hot solution is left to crystallise.

In copper metallurgical operation the sulphide of barium has latterly been employed for the purpose of precipitating from an ammoniacal copper solution the copper as a sulphide, which is treated in the usual method for a reduction, either by caustic lime, or by borax, or by galvanic current.

The artificial carbonate of baryta, obtained by passing carbonic acid gas through a sulphide of barium, whereby the carbonate of baryta is precipitated, is much used in Europe in glass making for producing an achromatic glass. In 1826 I assisted in Jena my teacher Koerner, in experiments for this object.

#### MINING IN CARDIGANSHIRE.

Tan-yr-Alt (Cardiganshire) Silver-Lead Mining Company (Limited).—A company under this title has just been formed, for the purpose of working a mine of that name, situated at Talybont, about seven miles from Aberystwith. It is in a district long known and worked for its silver-lead deposits, being west of Esgair-hir, Blaen Caelan, Alt-y-Crib, and other productive mines—in fact, in the centre of the mineral zone which traverses Cardiganshire. The mine has already been laid open, and several lodes discovered, from which many tons of lead ore were sold, although but a very shallow depth has been attained. There is an engine, boiler, &c., together with all the newest appliances for treating the ore all erected by the vendor, who takes payment for the whole, together with the mine, in fully paid-up shares. The remainder of the capital, which is in shares of 100/- each, has been subscribed for privately:—

[REPORT.]

Mines Royal, Cardiganshire, Jan. 8.—The specimens so hurriedly sent bear no comparison with the general appearance of the lode, which, besides the quality being so thoroughly intermixed with manganese, the base or ground-work being iron ore of a high percentage, its enormous size (certainly not less than 10 fms. wide), presents another great feature—it being in a well-known lead-bearing strata, being, as you are aware, in the run of the Dylife, Van, and Great West Van lodes, and directly adjoining the Esgair-hir Mine. I believe, though there may be thousands of tons of iron ore taken from the back of the lode, that the mine will prove in depth to be lead; my advice, therefore, is to sink 10 or 15 fms., and then cross the lode through, to ascertain its size and value. In conclusion, I beg to say that I have a strong conviction of the value of the property, as I think I have never seen a more likely place to prove a great prize, and one which can be proved by so small an outlay.—J. WILLIAMS.

#### FOREIGN MINES.

HORNACHOS.—A special letter has just been received from these mines, stating that the Afortunado property has very much improved, and that in the opinion of the manager it will turn out

## Mining Correspondence.

## BRITISH MINES.

**ABERDAUNANT.**—S. Toy, Jan. 21: The 10 is now driven 12 fathoms west of Hill's cross-cut, and we are still driving it with a full pare of men. The forebears at present is poor, and on account of snow and the heavy rains we have had lately has increased our water very much.—Intermediate Level: The stopes here are not looking quite so good as they were last week, now worth 10/- per cubic fathom for lead.—No. 6 Adit: We still have good branches of lead in the north part of the lode, and at present is worth 9/- per fathom. All the machinery on the mine is in good condition, and all other works progressing satisfactorily.

**ABERYSTWITH.**—John Trevethan, Jan. 19: The different bargains throughout the mines progress satisfactorily. We have no change to report in the lode at the 88 east. The same level west of shaft is improved, producing good specimens of lead ore, presenting an encouraging appearance. I hope soon to have a further improvement to report in at each end. The tribute pitches also look well. The dressing is going on as fast as the wet weather will admit.

**ALLIY CRIB.**—J. Clint, Jan. 20: The materials are ready, and I hope to have skip-road and pumps in engine-shaft to the 25 fm. level by end of the week. When the pitwork is completed and a lodgment cut out the shaftmen will be set to sink another draught of 110 fathoms. The lode in the 10, east below adit, has greatly improved in the last 2 fms. drivage; it now contains a nice mixture of lead to the width of 3 feet, besides for 13 in. being strongly impregnated with copper and spottet with lead. The end set this month to six men to drive at 9/- 10/- per fathom is now only 3 to 4 fms. short of being underneath the 49 east winze, where the lode is also strong and productive; this winze is down over 5 fms., and the sinking is going on with four men, at 9/- 10/- per fathom. In driving with four men, at 6/- 5/- per fathom, from deep adit old cross-cut to connect with the South Mine shaft, the lode is again producing saving stuff, and from its strength and appearance I think it not unlikely an extensive deposit of ore may be met with before the drivage reaches the shaft. At the trial in deep adit, where two men have been working for little over a month (near old winze shaft), there are very promising indications of shortly making a valuable discovery. The rise in the 20 east, where now there are two men only, looks favourable for paying ground to stop be opened up. The same number of men are employed at South Mine as last month. Work, however, was very much retarded at the beginning of this month by the water breaking in with too great a force for the men to keep it down by tackle. We have now got pumps in shaft, and there is no difficulty in keeping the water forked. The sinking of shaft will be resumed in a few days.

**ASHSETON.**—M. Whitford, Jan. 21: The lode in the 40 end west is 2 feet wide, presenting a very promising appearance, yielding 6 cwt. of lead per fm., and I daily expect a further improvement. We have resumed the sinking of No. 1 winze below the 30, and we have just opened on the north part of the lode, which is yielding good stones of lead; we shall be in a position to speak more fully on it in my next report; the object of this winze is to ventilate the 40, and to lay open ground for stoping. No lode taken down in the winze sinking below the 30 west of Browne's shaft. No particular change in the various other bargains throughout the mine since last.

**BAMPFYLDE.**—S. Mitchell, Jan. 19: The stopes in the back of the 112 will turn out 2 tons of copper ore per fathom. No. 1 stope, in the back of the 102, is worth 35 cwt. per fathom; No. 2 stope, in the back of same level, will yield 2 tons of ore per fathom; No. 3 stope, in same level, will yield 2 tons of ore per fathom; No. 4 stope, in the same level, will produce 2 tons of copper ore per fathom. The lode is improving in the 102, driving west of No. 4 shaft, now worth fully 1 ton of ore per fathom. This part of the mine is thoroughly ventilated by the winze from the 90. The ground is favourable for driving at the 70, and the men making good progress. The ground at the 40, towards the eastern hill, is improving in appearance, and I am daily expecting a discovery of copper ore at this point. The lode in the new shaft at Stowford will turn out 30 tons of iron ore per fathom of good quality. Other points, both at this part of the mine and at Cowbowre, are without change, averaging 10 tons iron ore per fathom at each point of operation. We have a cargo of copper ore at Barnstaple ready for shipment. The captain of the ship gave me to understand they will be up alongside the wharf to-night, if so the ore will be put on board to-morrow (Tuesday).

**BEDFORD CONSOLS.**—G. Rowe, J. Mitchell, Jan. 21: The lode in the sump winze sinking below the 57 fm. level maintains its size and character, without any particular change since last report. The lode in the 57 fm. level, west of engine-shaft, is 4 ft. wide, composed of very strong mundic and fine stones of ore; altogether of a very kindly appearance, showing every indication of being near and passing over a big course of ore, which will be satisfactorily proved in a short time, after the sum winze is sufficiently deep to admit the proposed drivage in that direction.

**BEDFORD UNITED.**—Wm. Phillips, Jan. 22: Operations are still continued by the side of the lode in the 47 east, and in the rise. The mine throughout continues to look equally as well as reported last week.

**BLAEN CAELAN.**—Wm. H. Tregoning, Jan. 21: The ground in the new adit south of the Caerlan river, has during the last few days greatly changed in character; it has become easier for progress, and the lode contains branches of spar and carbonate of lime, impregnated with lead and copper ores, looking favourable for greater improvement. If this change in the ground continues it will greatly increase our speed in getting in under the Escair-hir road, besides the work will be done for less per fathom.—Engine-Shaft: There is no particular change in the cross-cut extending south from the 20 east since I saw you on Monday. I reported on Jan. 7 of having cut into a strong sparly lode; this is now cut through to a wall which dips south, and this lode, or part of the lode, is about 3 feet wide, and for that width is full of spar. The character of the end is blue basalt, with branches of spar and carbonate of lime, and water coming more freely from the ground.

**BLUE HILLS.**—S. Bennetts, A. Gripe, Jan. 17: The lode in the 66, east of Letcher's shaft, is not quite so productive as it has been, at present worth from 7/- to 8/- per fathom; the ground, too, is somewhat harder. A winze is to be forth with commenced below this level to ascertain the value of the lode a little deeper, and at the same time a little further from a gossan. The Wheal Betsy lode in the 13, east of Wheal Jay shaft, is of a promising character, but as yet not very valuable. The tribute pitches are not so productive as they were some few weeks since.

**BOG.**—W. T. Harris, J. Barkell, Jan. 21: We have been delayed a little this week in casting and dividing the engine-shaft, consequently there is no change to report in the sinking below the 163. We are getting on well in sinking the 163, and expect to add a couple of new pitches to our present number on Friday. Friday being our setting day a full report shall be sent you next week. We have sampled to day 35 tons of lead for sale on the 25th inst.

**BRYNAMBOR.**—George Sparro, Jan. 21: The men are making good progress in sinking shaft and cutting trip-blown below the 32 fathom level. The lode in the 32 east has improved much in appearance during the past week, and is yielding some good stones of lead ore. The same remark will apply to the 32 west. In the stope at the back of the 22 east we have just struck some good lead on the south wall, but shall see more of it in a few days. Other points in operation are without alteration.

**BURROW AND BUTSON.**—John Christopher, James Mayne, St. Agnes, Jan. 21: The 20, going east from Tonkin's shaft, is looking better, the lode still being about 3 ft. wide, and 1 ft. of it good for lead, blonde, and copper. This is coming under the lead ground near Hodge's shaft worked by the old men, who at that time had a run of lead 1 ft. wide. In clearing the 20, west of cross-cut, near the engine-shaft, we continue to find stones of lead in the stuff broken down from the back. Having close timbered the back, we cannot see much to value. The men have been taken from the 62 east to clear the 40. The end west is unproductive at present. All other parts of the mine continue as before reported.

**CAEGYNNON.**—T. Hodge, Jan. 21: The 70 east end is into a strong lode, yielding saving work for lead. The stope in back of the 70 west is worth 9/- per fathom. The lode in the back of the 60 east is worth 8/- per fathom. In the other bargains I see no change since my last. We are engaged carting down our lead to Aberyst with, and it will be weighed off as soon as we get it down.

**CENTRAL VAN.**—John Trevethan, Jan. 20: The men have nearly completed the preparatory shaft work previous to fixing the pitwork, and will in course of a few days begin the further sinking of the engine-shaft, which will be sent down as fast as mineable miners can sink it. Immediately the rails are fixed in the adit level the end will be pushed on by six men. The great advantage that will arise out of these two operations will soon be apparent, as I have already stated. The engine works admirably, and the shaft with work in it is in thorough order.

**COURT GRANGE.**—J. G. Green, Jan. 21: The Elgar cross-cut is not yet into the lode; the men have completed the bargains at 0 fms., at 74s. The end is letting down much more water than it had done, and I fully calculate that another 4 fms. driving will intersect the lode. All the surface work is being pushed forward with energy, and every effort is being made to get our large pumping-wheel to work this month.

**CRENNER AND WHEAL ABRAHAM.**—Wm. Thomas, John Vivian, James Hammill, Jan. 21: The men have completed cutting the plat, and the putting in of a plat solar at the 228, at Sturt's shaft, and they are at once commence to drive west. In the 215, driving west of shaft, the lode is 4 ft. wide, worth 10/- per fathom for copper ore.—Crenner Shaft: In the 160, driving east of this shaft, the lode is 1½ ft. wide, yielding a little tin, but not enough to value. The lode in the 140, driving west of the rise, is 2 ft. wide, producing good stones of tin.—St. George's Shaft: In the 203 driving east on the south lode, and west of shaft, the lode is 2 ft. wide, producing copper ore to the value of 6/- per fathom.—Pelly's Engine-Shaft: The men are progressing fairly in sinking the shaft. There is no change to notice in the 248 fm. levels driving east and west of the shaft. In the 234 fm. level driving west the lode is, on the average, 5 ft. wide, and worth for copper 10/- per fathom. We have set a bargain at 14/- to eight men, to take down the south side of the level preparatory to sinking below this level.—Blewitt's Shaft: In the 220 driving west the lode is 5 ft. wide, producing good stones of tin.—Richards's Shaft: In the 200, west of shaft, the lode is 5 ft. wide, and worth for copper ore 12/- per fathom, with a kindly appearance for further improvement. The lode in the 150 driving west continues without change. We sampled yesterday 342 tons of good quality copper ore. There are employed this week on tutwork 141 men and boys; tribute 39/- at surface, 60/- total 240.

**CWM DWYFOR.**—N. C. Morcom, Jan. 22: In the north cross-cut we have just passed through a large copper lode. We are pushing on this cross-cut as fast as possible, and expect to intersect the old lead lode in about 5 fms. Judging from the appearance of the lode in the old lead shaft, we may reasonably look for good results. When we have cut the lead lode we shall drive east on its course in order to communicate with the shaft for ventilation in carrying on other operations. The south cross-cut is suspended for the present, and the men put to drive east on No. 3 lode, where some large stones of copper and lead ores have been broken. The lode at present is divided by a horse, with quartz, copper, and iron pyrites on its south side, and a leader or branch on the north. The fourth lode, intersected by the south cross-cut, has a very kindly appearance. There are several important points on the different lodes to be operated on, and as soon as the crusher and the other dressing machinery are erected we shall be able to make returns of copper and silver lead at once. The pumping and machinery are in good order, we have intersected the south part of the lode, not sufficiently opened upon to make any value thereof, but still it is producing lead and blonde ores by this day week; I shall be able to give you more particulars. No change to remark in the same level east of shaft. All the stopes are producing the same quantity of lead and blonde ore as last advised you. Our machinery is working well.

**CWM YSTWYTH.**—Jan. 19: We beg to state our stope and tribute pitches are looking just as usual. We have commenced a new winze in a nice lode in the bottom of Gill's 100' level, and should the ore hold down, which we have reason to think it will, when opened out, be a great help to our future samplings. Our machinery is all in good order, and working well. We are pushing on with the dressing as fast as possible, and shall sample 15 tons of lead ore on Jan. 20.

**DE BROKE.**—T. Hodge, Jan. 21: No lode has been taken down in the 25 east end since my last. The 25 west end is looking better, the vein being mixed up with lime, spots of lead, and very nice looking quartz; we expect an improvement here soon. All surface work is being pushed on as fast as the bad weather will admit.

**DENBIGHSHIRE CONSOLIDATED.**—J. Pryor, Jan. 22: The incline is still producing good paying stuff—the ore carries very flat, which will fully account for our not having intersected the run in the level below. There is nothing to notice regarding change in the 112 east and west.—Parry's Shaft: The pump in the sump answers its purpose well. We shall now place the men that were sinking to drive east from the bottom, and strip down the lead which is standing each side.

**DYLIFFE.**—Edward Evans, Edward Rogers, Jan. 21: We are pushing on the principal points of operation as fast as possible in order to enable us to increase the returns. The improvement in the 25 west is opening out very well, and likely to continue for a long distance. The 25 and 15 are driving by a full quantity of men, so that we may reach the rich ore gone down in the bottom of the adit as soon as circumstances will permit. The 165, west of Boundary shaft, still continues just as usual, thereby showing that the lead-bearing ground is lengthening in that direction, and we expect to have at the 117 a longer and better lode than at the present level 12 fathoms above. At the shaft we are making good progress towards that object. The other points are just about the same as named in the last setting report.

**EAST BLACK CRAIG.**—Thomas Cogar, J. Betty, Jan. 21: The No. 3 cross-cut east of shaft, at the 108 fm. level, has improved for lead since last reported on. We will report value of the same in our next report, when we have opened out a little more. The stope west of winze is as good as last reported upon. The stope west of shaft still looks well, and is worth 25/- per fathom for lead, and 1 ton of blonde. The 92 end driving east is in nice ground, composed of carbonate of lime, sulphur, lead, and blonde. The stope west of shaft is worth 14/- per fathom for lead. The old stopes are yielding about their usual quantities of lead. The winze at the 88 is in good ground, but is not yielding as much lead as when last reported on.—Palnure Trial: The present end is worth 4/- per fathom for lead. The back of the level is worth fully 8/- per fathom. Surface work and machinery as usual.

**EAST CHIVERTON.**—R. Southey, Jan. 21: Good progress has been made in driving the 64 west of engine-shaft; the lode is large, and at times producing good stones of silver-lead, which is more than we expected, as the present end is 15 fms. east of the shoot gone down in the bottom of the 52 fm. level. We are pushing on this level with all possible dispatch in order to get under the productive lode alluded to, when we may anticipate good results. The lode in the 52, driving east of the engine-shaft, has improved for blonde, and is much larger than when last reported on, now fully 4 feet wide, composed chiefly of friable quartz, blonde, and mundic, with very fine silver lead ore. I should not be surprised any hour cutting into a fine lode for the latter mineral. The stope in the back of the 40 is the same as last reported on. Our water is exceedingly easy for this season of the year. Engine only working 3½ strokes per minute. Everything progressing satisfactorily.

**EAST DARREN.**—Jan. 20: Taylor's Shaft: In the cross-cut north of the 116 east the ground is chiefly composed of a dark clay-slate, branches of carbonate of lime, and stiff for exploring. In the stopes over this level the lode is 1 yard wide, much fallen off in value since last reported on, now yielding about 8 to 10 cwt. of lead with small spots of lead ore. The tribute pitches throughout the different levels are without change to notice since last reported on. Our machinery is in good working order. The weather for the past fortnight has been much against us, causing, on account of strong winds and heavy falls of rain, but the drawing and dressing are being pushed forward with all speed possible. We have to day sampled 50 tons of silver-lead ore, for sale on Feb. 2.

**EAST WHEAL BASSET.**—R. Pryor and Son, Nicholas Bartle, Jan. 21: The lode in the 110, west of cross-cut, is 3 ft. wide, and worth 10/- per fathom. The lode in No. 1 stope in the back of this level is worth 10/- per fathom, and in Nos. 2 and 3 stopes, in back of ditto, the lode is worth respectively 6/- and 8/- per fathom. The lode in the stope in the bottom of ditto is worth 7/- per fathom, and the lode in the 70, driving west of cross-cut, has an improving appearance, and is now worth 10/- per fathom. Other places throughout the mine are without change to notice. Friday being our pay and setting day a full report shall follow.

**EAST WHEAL GREVILLE.**—E. Hosking, W. Bennetts, Jan. 22: The lode in the engine-shaft sinking below the 120 is 3 ft. wide, and producing a little copper and tin. The lode in the 120 west is 1 ft. wide, and worth 10/- per fathom. The lode in the 120 cross-cut is a little easier, and the men making better progress. The lode in the 110 east is 18 in. wide, yielding saving work for copper and tin. The lode in the 110 west is 2 ft. wide, and worth 6/- per fathom. The lode in the 95 east is 2 ft. wide, and worth 10/- per fathom. The stopes above the 95 east are each worth 8/- per fathom. The stope below the 85 east is worth 7/- per fathom.

**ELGAR.**—J. Trevethan, Jan. 22: Our shaft is down 13 fms., and the rise to meet it over 1 fm., leaving 5 fms. more to communicate to the adit level; as soon as this is done I will put a pair of men to stope in the back of the level, where the lode will produce 1 ton of lead ore per fathom, and in places 4 tons of blonde per fathom. Our men are working with a will, and all points of operations are progressing satisfactorily.

**FRANCO CONSOLS.**—W. Doidge, Jan. 20: There is no particular change in the shallow adit west since last report; good progress is still being made. The sawyers have commenced cutting stuff for the rails, and we expect the tramwagon in the early part of next week, when we shall commence to lay down the road.

**FRANK MILLS.**—J. Nichols, Jan. 14: I have carefully inspected this mine to-day, and the following is my report of its prospects:—In the north part of the mine, at the 45, a level has been driven on east branch several fathoms; in places the lode yielded 1 ton of lead ore per fathom; the drivage is being continued by six men, at 4/- 10/- per fathom. The lode in the end has been comparatively poor for a few feet, but is again improving, and now yields 5 cwt. of lead ore per fathom. The stope in the back of this level, by six men, at 1/- per fathom, is now producing 5 cwt. of lead ore per fathom. I notice that in places at each end of the stope the lode is of much greater value; this shoot of lead has not been seen above or below this place; the stratum is congenital, and composition of the lode favourable, therefore I have no doubt a great deal of lead will be raised from about this point. A cross-cut is now being driven east at the 45, by four men, at 5/- per fathom, to intersect this lode 12 fathoms further south, and attention will shortly be given to prove it at the 60. The north winze is communicated from the 100 to the 115, which has thoroughly ventilated this part of the mine. The men were put to drive the 115 north, on the iron lode, but seeing you had already laid open immense reserves of iron ore I advised the suspension of this for the time, in order to have the men to extend the cross-cut west from the 84 south. This cross-cut was started some years ago, with a view to intersect the western lode 70 fathoms south of any point where it has yet been seen; the cross-cut has reached a most congenial channel of ground for lead, and I consider the lode will be intersected in about 15 fms. more; and taking into consideration the fact of there being full 200 fms. in length on this lode entirely unexplored, I see no reason why it should not prove equally as productive for lead as the north ground did, the prospects for lead, therefore, are good. In conclusion, I again beg to remark that you have immense reserves of sphalerite iron ore laid open, and it only requires the completion of the railway for this mine to resume dividends.

**FRON VELLAN.**—Capt. Harper, Jan. 21: In the cross-cut driving north of the level, west of deep adit, the ground is much the same as for some time past, still hard for driving, but letting out much more water than what we have seen here before. In the new shaft, sinking in the eastern part of the sett, the ground is much the same as last reported; satisfactory progress is being made in sinking; there is not much water at present in the shaft.

**FURZIE HILL.**—W. Doidge, Jan. 22: No. 1 North Lode: Good progress is still being made in the 51 east, and I hope in my next to have something good to report in this end. The stopes in the back of this level are much the same as for some time past, still for some time past, worth 3/- 10/- per fathom.—Middle Lode: In the 54 west, 10 fms. from cross-cut, we have commenced a rise to communicate with the 40 for ventilation, and to open out ground for stoking; the lode here is producing a little tin, and I expect an improvement in the course of a few days. The lode in the 40 west is about 20 in. wide, composed of capel, spar, and tin, a very kindly end. A new stope has been opened in the back of this level, west of the rise, referred to in my last report, where the lode is worth 6/- per fathom. The stope east of the rise is worth 7/- per fathom. We are busily engaged in preparing another parcel of tin for market, which will be about 3½ tons; and should the lode in the 54 east, on No. 1 north lode, turn out as I anticipate it will enable us to increase our samplings. The lode is of much greater value; this shoot of lead has not been seen above or below this place; the stratum is congenital, and composition of the lode favourable, therefore I have no doubt a great deal of lead will be raised from about this point. A cross-cut is now being driven east at the 45, by four men, at 7/- per fathom. The lode in the 52 to drive west of Pool's shaft, by four men, at 6/- per fathom; the lode is 2½ ft. wide, and produces a little ore and tin. The 46 to drive west of Pool's shaft, by four men, at 7/- 10/- per fathom; the lode is worth 8/- per fathom, and the ground is much easier for driving. We have set 10 pitches, to 36 men, at tributes varying from 10s. to 34s. 4d. in 11, the tributes to be paid at the rate of 60/- per ton for black tin.

**FRON WEST ROSEWARNE.**—John Curtis, Jan. 21: Lead's flat-rod shaft is sunk 15 ft. below the 10 fm. level;

the roof and closing it all up. We do not see much change worthy of remark in any of the different bargains in the mine that are being operated upon since our report of the 7th inst. If anything, the stoves are rather improved.

**PEDN-AN-DREA UNITED.**—W. Tregay, W. Prideaux, John Pope, Jan. 27: **Sump:** The water is now pretty quick, but we have no difficulty in keeping it, yet the sumpmen cannot make so good progress in sinking as when the water is easier. In the 140 east the pitch in the bottom of this level is just as last report, the lode being worth 40/- per fathom. In the 140 west end the lode (Martin's) is worth 20/- per fathom. In the 130 west end the lode (Martin's) is worth 10/- per fathom.—**Cobbler's:** In the 120 west end the lode (Martin's) is worth 15/- per fathom. In the 110 west end the lode (Martin's) is worth 10/- per fathom.—**Cardozo's:** In the 90 west end the lode (north) is worth 10/- per fathom. In the 80 west end the lode (north) is worth 10/- per fathom. In the 70 east end the lode (north) is worth 15/- per fathom. The 60 west rise has been communicated with the level above, and the men set to drive the 60 west end, where the lode is worth 20/- per fathom. In the 55 east end the lode (north) is worth 10/- per fathom. In the 55 west end the lode (north) is worth 12/- per fathom.—**Trevena's:** In the 47 east the branches are worth 20/- per fathom.—**Street:** In the 30 east end the branches are worth 10/- per fathom. In the 30 west end the branches are worth 12/- per fathom.—**Critchley's:** In the 10 shaft the ground here is still hard, progress moderate. No other changes to report.

**PENNERLEY.**—W. T. Harris, J. Delbridge, Jan. 21: **Engine-Shaft:** The lode in the 25, driving east, is rich course of lead, equal to anything that has been seen in this level. The rise is 30 fms. long and 6 ft. high, with 8 tons. The lode in the winze sinking below the 120 continues worth 3 tons of lead per fathom. No alteration in the winze sinking below the 80. The lode in the 70, driving east, is 6 ft. wide, composed of carbonate of lime, blende, and lead ore, a promising lode. The lode in the 60, driving east, is at present unproductive, but we are looking for an improvement as we approach the east and west lode. The 40 cross-cut, driving to intersect the north lode, is making fair progress, and the ground is of a very congenital character. The lode in the 25, driving east, yields good stones of lead.—**Potter's Pit:** We are now cutting plat, preparatory to sinking below the 55. The level driving west is very encouraging for a good yield of lead; at present the lode is worth 1 ton per fathom. The lode in the 45, driving west, is worth 1 ton of lead per fathom. The lode in the winze sinking below this level is worth 3 tons of lead per fathom, and very encouraging. The stoves throughout the mine are yielding lead as usual. To-day we have sent out samples for the sale of 75 tons of lead on the 28th inst.

**PERRAN CONSOLS.**—J. Juleff, J. Nance, Jan. 21: The 40 cross-cut, east of Hallett's, has just intersected a part of the lode, which is producing a little tin, and we expect shortly to intersect the main part. In the 20 cross-cut, south west of Hallett's, we are still pushing it on to intersect the south or principal part of the lode, which we think will prove productive. In the 40, west of flat-rod shaft, we have taken down some of the south part of the lode, which will produce 2 qrs. of tin to the ton of stuff, and as soon as we can get men we shall cut through it to prove its value; we look at this as an important point. In the 40, east of flat-rod shaft, the lode is driving on the north or soft part of the lode with speed, and in taking down the main part behind the end we think it worth 25/- per fathom, and it seems to be getting into a first-class run of tin ground.

**PHENIX (Silver-Lead).**—R. Pryor, E. Adams, Jan. 20: We continue to make good progress with the sinking of the engine-shaft below the 60, and the lode therein continues of the same kindly nature as when last reported on, producing 21 cwt. of lead per fathom. The other bargains throughout the mine are without any noteworthy change since our last report.

**PLYNLIMON.**—J. Garland, Jan. 19: Consequent on the late heavy falls of snow and rain, nothing has been done in the 24, east of engine-shaft, since last report, the water being in; this I hope to get in again in a day or two. Good progress has been made in the rise over this level; I hope to communicate same with the winze in about one month, when the men will at once commence rising against the new shaft. The men from the cross-cut in the 12 fm. level end I have placed to stope on the new lode (west of cross-cut towards the north lode) to prove same as it goes up towards the adit, and should it improve as I anticipate I would advise the commencing of a cross-cut north from the adit level, in order to open same as speedily as possible. Nothing has been met with in the cross-cut towards the north lode as yet. In the stope over the 12, west of Williams's winze, the lode produces about 12 cwt. of lead ore per fathom. A stope east of last produces 1 ton of lead ore per fathom. A stope east of ditto yields 15 cwt. of fathom. A stope in the bottom of the 12, west of engine-shaft, produces 10 cwt. of fathom; this winze is down about 9 ft. below the bottom of level. The adit level, east of cross-cut, is getting into settled ground, and an improvement may be shortly expected. The same level, west of cross-cut, is now opening out a fine piece of ore ground, producing 1½ ton of lead ore per fathom; judging from the water issuing from the roof of the level we may reasonably hope that the ore ground will hold up to a good height over same, which will give stowing ground for some time. Two stoves over this level average a produce of 15 cwt. of lead ore per fathom respectively. The weather of late having been very wet and stormy has kept back all surface work. The next sampling, of 40 tons, will take place on Saturday next, the 24th instant, of which I will advise you as usual.

**POLROSE.**—S. J. Reed, Charles Bottrell, Jan. 22: The accident caused to our pumping machinery by the breaking of the crank has been made good, and we are glad to say we commenced to drain below the 30 last night. The prospects of the mine are good, and the lode in the 50 east is worth 30/- per fathom.

**PRINCE OF WALES.**—J. Gifford, F. Phillips, Jan. 20: In the 90 east the lode is full 4 ft. wide, worth 20/- per fathom for tin and copper. In the 90 west there is no change since last report. The stope in back of the 90 west is worth 8/- per fathom for tin and copper. In the 63 east we are driving by side of lode, which is good to say we commenced to drain below the 30 last night. The prospects of the mine are good, and the lode in the 50 east is worth 30/- per fathom.

**QUEEN'S (Silver-Lead).**—E. Evans, Jan. 21: Gladstone's shaft is now repaired, and we are winding debris daily; we expect to have the bottom of the 140 yard level cleared this week. The new lode in the 80 yard level is still very promising, and producing a fair quantity of lead daily. This lode was very narrow in the roof at the commencement, but is gaining strength as we proceed; we have now 15 in. of mixture—lead, spar, and clay—which comes down to the bottom of the level. We have driven through the ground 6 yards. I shall wind a lot of lead on Monday next, and commence dressing same at once. I have obtained the services of a first class washer, and expect to have a parcel ready for next sale at Holywell. I would recommend that six men should be put on the 100 or 120 yard level at once.

**ROMAN GRAVELS.**—A. Waters, Jan. 22: The 95, south of the engine-shaft, is worth 45/- per fathom; this end is now south under where the lode in the 80 first began to yield ore, and it may be said, therefore, that the great runs of ore ground in the mine are all before the said 95 end. The stope in this level, north and south of No. 1 winze, are worth 60/- per fathom. The 80, south of No. 3 winze, is worth 60/- per fathom. No. 2 winze, below the 80 south, is worth 40/- per fathom. The 65, south of No. 2 winze, south of Corfield's, is worth 60/- per fathom. The 65, south of No. 3 winze, below the 65, is worth 45/- per fathom. The Sawpit lode is passing through the Roman vein in the above end, and the east side of the latter vein does not look quite so rich for ore as of late, but when explored on the south of or through the Sawpit we expect the Roman lode will be more productive than ever. The stope at and about Corfield's are just as last reported. To-day we have sold 230 tons of lead ore, at an average price 15/- 1s. 6d. per ton.

**ROSEWELL HILL AND RANSOM UNITED.**—W. Buglehole, John White, Jan. 22: **Standard Lode:** The lode in the 60, east of Ransom shaft, is 18 in. wide, worth about 5/- per fathom. The lode in the 80, west of sump shaft, is 18 in. wide, yielding a little tin, but not enough to value. We are pushing on this end with all speed towards Penberthy's slide, where we expect to find a productive lode.—**Wheat Mary Lode:** The lode in the 90, east of the cross-course, is looking better, now 6 in. wide, and worth 5/- per fathom. The 100 fm. level west on this lode is unproductive.—**North Carbona:** The lode in this carbona, in the back of the 100, is not quite so well as when last reported on; now worth 60/- per fathom. The lode in the bottom, however, is looking better, now worth 50/- per fathom. This bunch of tin is lengthening to the westward very rapidly, and is, in our opinion, the main part of the lode. Nos. 2 and 3 crossings, east of the Carbona, have fallen off since our last report, and are now worth 20/- per fathom.—**Middle Lode:** The lode in the 95, 5 ft. wide, and worth about 15/- per fathom. In the 71, east of King's shaft, the lode is 5 ft. wide, and worth about 15/- per fathom. In No. 3 winze, sinking under the 71, west of King's shaft, the lode is 6 ft. wide, and worth about 26/- per fathom. We have commenced a rise in the back of the 71, against Vivian's shaft, the lode being 6 ft. wide, and worth about 25/- per fathom. In the 61, east of King's shaft, the lode is 2 ft. wide, and worth about 10/- per fathom. In the winze sinking under the 61, east of King's shaft, the lode is 5 ft. wide, and worth about 15/- per fathom. In the 20 east of new shaft, the lode is 2 ft. wide, and worth about 10/- per fathom. In the deep adit level, west of Reservoir shaft, the lode is 2 ft. wide, and worth about 8/- per fathom. There is nothing at the other points of operation requiring notice.

**SOUTH GREAT WORK.**—S. J. Reed, Jan. 21: There is an improvement in the 10 fm. level, west of engine-shaft; the lode is 2 ft. wide, worth 11/- per fathom. This end is now approaching the run of tin ground formerly worked on, probably 40 years since, where it is said a splendid lode had gone down. In the 25 fm. level, east of flat-rod shaft, the lode is 4 ft. wide; worth 9/- per fathom. The western drivage has been in a good lode for several fathoms, and is now worth 14/- per fathom. I consider the prospects of the mine for deeper sinking were never so good as at present, as the bottom level has much improved beyond anything that has been seen in the level above. The last sale of tin for four weeks was 3 tons 2 cwt., 3 qrs., 15 lbs.

**SOUTH MERRILYN.**—R. Rowlands, Jan. 22: In the 120 yard level north the lode is 3½ ft. wide, composed of nice spar, clay, and lumps of ore, and by appearance it will be strong if we do not meet with a strong course of ore. We have 12 in. of nice gravel, sand, and lumps of ore. The dressing is going on satisfactorily.

**SOUTH PHENIX.**—J. Kelly, Jan. 20: Pearson's Shaft: Grace Dieu Lode: We have cut through the lode at the 20, west of the shaft, and find it to be 19 ft. wide, composed principally of peat, containing mudi and tin, the latter I consider to be good stamping work; this is a very fine lode indeed, and being so large I have no doubt will be a good paying lode. I cannot value it at present, as there is so much mudi with the tin, but we are erecting a burning house, when I hope shortly to be able to give you a correct estimate of its value. The shaftmen are cutting the plat at the 30, and we shall resume sinking with all speed as soon as possible.—**Hazledine's Shaft:** In Greenhill lode, driving east at the 20, the ground is hard, and the lode small and poor. The stope in the bottom of the 10, east of

shaft, are yielding good work for tin. The stope west of shaft, at the 10, are producing good work for tin. The masons are making good progress with the burning house, and if the weather is favourable we shall be able to light the oven in about three weeks. All the machinery is in good working order.

**SOUTH ROSKEAR.**—W. Skewis, J. Brenton, Jan. 20: **Gregory's Shaft:** The men are now dropping a lift to the 110. We are making good progress in fixing skip-road in sump whin-shaft. The skip-road in western whin-shaft is complete to the 80, and plat solvers put in at the 50 and 80. We have ascertained that Duncan's shaft is now clear to the bottom of mine. We are now drawing tributes' stuff from the 20 and 30 at Vivian's shaft. The 25-in. winding-engine has been set to work, and it draws the kibble with the greatest ease. We shall be ready to sell a parcel

of tin by end of next week.

**SOUTH TOLCARNE.**—J. Vivian and Son, J. Pauli, Jan. 20: **In the deep adit level, west of the cross course, we are driving by the side of the lode, for the purpose of making greater speed, but shall strip down the lode in time to report its appearance next week.** The masons have now to build the brickwork about the cylinder, and to plaster the engine-house inside. The carpenters are getting on well with the flooring, doors, windows, stairs, &c., of the engine-house.

**ST. AGNES CONSOLS.**—W. Vivian, Jan. 22: The shaftmen will complete the cutting of the plat in the 60 in a day or two. We shall resume the sinking of the shaft below the 60 in the coming week. We propose to sink the shaft 12 fathoms deeper, and then to drive a cross-cut south to intersect Wheal Kitty flat lode. If the ground continues in the shaft as it has been up to the present time we may expect to intersect the lode in the 72 by a cross-cut south, about the end of the present year. We have every reason to expect a good course of tin in the 72, as we are now working on good courses of tin above and below this level in Wheal Kitty, near our eastern boundary.

**ST. JUST AMALGAMATED.**—Richard Pryor, Thomas Richards, William Badwen, Jan. 21: The shaftmen are getting on well with the cutting of plat in the 120, and will soon complete the same, after which no time will be lost in resuming the sinking of Savel's engine-shaft below the 120. The lode in No. 2 winze, in bottom of the 110, has a little improved, and is now worth fully 30/- per fathom, with a good appearance. Other places throughout the mine continue as when reported on in our setting report.

**SUCCESS, RUSHY CLIFF, AND NANCY CONSOLS.**—H. Francis, Jan. 22: We are progressing favourably with the sinking of Nancy shaft; the ground here is precisely of the same character as that in the upper section (over the deep adit) of the great Ecton Mine, being composed of alternate beds of blue limestone and chert; the vein at present is composed of branches of barite, bearing occasional spots of the ores of lead and copper. The vein in Rushy Cliff adit is much the same as last reported, being thickly spotted with ore from the top to the bottom of the level; the ground has become much harder for driving, at the same time it is more congenial for bearing ore than that driven through for the last 8 fathoms.

**TAMAR CONSOLS.**—G. Rowe, Jan. 21: The lode in the drivage, east of the engine-shaft, is of the same general character as described in my former report, being 1 ft. wide, composed of spar and mudi, mixed with occasional stones of blende and silver lead ores. The drivage east from the trial shaft, on the manganese lode, is progressing so fast as the nature of the work will admit through a large lode, and in this season of the year quick water, which we hope will improve.

**TANKERVILLE.**—A. Waters, Jan. 22: The lode in Watson's shaft, below the 140, is of a strong and masterly character, composed of white soft carbonate of lime and solid lead ore. We are on the eve of a change for the better in the bottom of the shaft, the lode having made a great turn off again under the hanging-wall. More on this subject next week.

**TREGARDOCK.**—J. Sparro, T. Sparro, Jan. 21: The lode in the deep adit, driving towards the junction of Nos. 2 and 3, continues to yield good lead.

The stope in the roof of this level are yielding splendid work for market. The surface work is going on as fast as the small staff of men will admit. Other parts of the mine are without alteration.

**TRELEIGH WOOD.**—E. Hosking, John Harris, Jan. 21: The following bargains were set on Friday last:—The 44 to drive east of the cross-course by six men, at 8/- per fathom; the lode in the end is producing stamping work. In the 44, west of the engine-shaft, we have been cross-cutting through the lode; the lode in the end has very much improved, a small parcel drawn from it produced 6½ tons per fathom; but the engine being idle some hours on Saturday and Sunday last caused the water to rise, so that nothing has been done in the end for some days; we expect to resume driving to-morrow. To drive the 44, east of the cross-cut, to engine-shaft, on the north part of the lode, by two men, at 5/- 10s. per fathom; this is to get under the stope working below the 34 east of the engine-shaft. We expect an improvement in the end as we drive east. At present there is nothing in the end to value. To stop the north side of the 44, west of the engine-shaft, by four men, at 9s. per ton; lode worth 11/- per fathom. To stop the bottom of the 34, east of the engine-shaft, by six men, at 6s. 6d. per ton; lode 6 ft. wide, and worth 12/- per fathom. To stop the north side and back of the 34, east of Harris's winze, by eight men, at 7s. per ton; lode 8 ft. wide, and worth 28/- per fathom. To stop the back of the 34, west of Harris's winze, by ten men, at 6s. 6d. per ton; lode 12 ft. wide, and worth 40/- per fathom. To stop the back of the 34, west of engine-shaft, by four men, at 4s. per ton; lode 10 ft. wide, and worth 10/- per fathom. To stop the north side of the 34, west of Nut Bottom shaft, by four men, at 5s. per ton; lode 6 ft. wide, yielding stamping work. To drive the 24, east of Windmill shaft, by two men, at 12/- per fathom; lode 6 ft. wide, yielding stamping work.

**TRELEIGH WOOD UNITED.**—James Brown, Jan. 22: We are making good progress in preparing and fixing the lift from the adit to the 40. We have to drop about 50 fms. of main rods to complete this work; we are pushing on with all speed. The tutwork bargains are of about the same value as last reported. Full report next week.

**TYLLWYD.**—John Pauli, Jan. 22: We have during the last few days opened one of the old levels; in the bottom of same we have an old winze about 8 ft. deep, containing a lode 2 ft. wide, which will yield good stamping work. At present we are laying it open, and, if found to be going down and improving, we propose to bring on the level below, which is some fathoms behind this point, when, in all probability, we shall lay open some profitable ground in addition to what we have already in this section of the mine. All other points much as usual. Surface work going on well, for which at present we have fine weather.

**VAN CONSOLS.**—J. Roach, Jan. 22: Although the 75 is not yet into ore of importance, still the lode to day presents appearances—crystallized lime spar, cubes of lead, and sulphur—that lead us to expect a course of ore daily. We are now near the great band of gritstone in which there was so much ore found in the 10. The lode in the 60, east of Gundry's, is upwards of 15 ft. wide, and contains ore from wall to wall, yielding 5 tons per fathom, and we think from the improved character of the ground that it will continue; the ore is very strong in the bottom of the level as well as in the roof. The cross-cut from the bottom of No. 1 winze is now driven 21 ft.; this contains branches of ore, but we have seen no south wall yet. The lode in No. 2 winze, below the 60, has just struck the footwall of the lode, which is disseminated with lead throughout. In the 45, east of Little's, the lode has improved, and is now yielding good stones of lead. The winze sinking under the 35, west of rise, is without material alteration. The stope in the roof of the 60, east and west of winze, are yielding 2 tons of ore per fathom. You will see from the above report that our prospects have greatly improved in the 60 east, and will, no doubt, lead to great riches. The dressing is going on as fast as possible.

**VAN CONSOLS.**—J. Roach, Jan. 22: We have during the last few days opened one of the old levels; in the bottom of same we have an old winze about 8 ft. deep, containing a lode 2 ft. wide, which will yield good stamping work. At present we are laying it open, and, if found to be going down and improving, we propose to bring on the level below, which is some fathoms behind this point, when, in all probability, we shall lay open some profitable ground in addition to what we have already in this section of the mine. All other points much as usual. Surface work going on well, for which at present we have fine weather.

**WHEAL CREBOR.**—J. Goldsworthy, Jan. 21: In the 120, east of Cook's shaft, the men are making fair progress in taking down lode, which is full 6 ft. wide, of a favourable description, and worth for copper from 40/- to 45/- per fathom. In the stope in the back of the 120, lode is worth from 35/- to 40/- per fathom.

**WHEAL GRENVILLE.**—E. Hosking, W. Bennett, Jan. 17: The lode in the 150 is worth 35/- per fathom. The rise above the 150 is 20/- per fathom. The lode in the 110, east of cross-cut, is worth 30/- per fathom. The lode in the 100, east of north shaft, is 2 ft. wide, and worth 15/- per fathom. The lode in the 110 east is worth 10/- per fathom. The lode in the 100 east is 2 ft. wide, and worth 8/- per fathom. The lode in the 100 west is 20/- per fathom. The lode in the 100 east is 15/- per fathom.

**WHEAL GRENVILLE.**—E. Hosking, W. Bennett, Jan. 22: There is no change in the time past.

**WHEAL KITTY (St. Agnes).**—S. Davy, J. Williams, Jan. 17: **New Shaft:** Pryor's Lode: We have nothing new to report in the 142 fm. level cross-cut, driving south. The lode in the 130 fm. level, driving west of shaft, is worth for tin 9/- per fathom. The lode in the 130 fm. level, driving east of shaft, is worth for tin 10/- per

## The Mining Market: Prices of Metals, Ores, &amp;c.

METAL MARKET—LONDON, JAN. 23, 1874.

COPPER.	£ s. d.	£ s. d.	IRON.	per ton.	£ s. d.	£ s. d.
Best selected, p. ton	92 0	0 0 94	0 0	Bars Welsh, in London	12 5	0 12 10
Tough cake and tile	90 0	0 0 92	0 0	Do, to arrive	11 15	0 12 10
Sheathing & sheets...	98 10	0 0 97	10 0	Nail rods	12 5	0 0
Bolts	100 0	0 0 101	0 0	" Staffd. in London	12 10	0 0
Bottoms	99 0	0 0 101	0 0	Bars ditto	12 10	0 11 0
Old	85 0	0 0	—	Hoops <sup>1</sup>	14 0	0 15 0
Burra Burra	91 10	0 0 92	0 0	Bars, at works	11 10	0 0
Wire—per lb.	0 1	0 0 1	0 0	Hoops <sup>1</sup> ditto	13 0	0 0 14 0
Tubes	0 1	0 0 1	0 1	Sheets, single, & plates <sup>1</sup>	10 0	0 15 10
				Pig No. 1, in Wales	5 0	0 6 10
BRASS.		per lb.		Refined metal, ditto	7 0	0 8 0
Sheets	101 11d.			Bars, common, ditto	11 9	0 11 10
Wire	10 1/2d.			Do., mch. Tynor Tees	15	0 11 10
Tubes	11 1/2d. 11 1/2d.			Do., railway, in Wales	10	0 11 0
Yellow metal sheathing	8 1/2d.	8 1/2d.		Do., Swed. in London	19	0 19 15
Sheets	8 1/2d.			To arrive	19	0 19 5
SPELTER.	per ton.			Pig No. 1, in Clyde	5 5	0 5 15
Foreign on the spot...	25 10	0 0 26	0 0	Do., Do., Tynor Tees	4 10	0 5 10
" to arrive ...	25 10	0 0	—	Do., Nos. 3, 4, f.o.b., do.	—	—
ZINC.				Railway chairs	5 5	0 6 0
In sheets	31 10	0 0 32	0 0	Spikes	12 10	0 14 0
QUICKSILVER (p. hot.)	19 0	0 0 19 10	0	Indian Charcoal Pigs,	0 0 12 0	0
TIN.				in London, p. ton	10	0 0 12 0
English blocks ...	£120 0	0 0 121	0 0	STEEL.	per ton.	
Do., bars (in brls.)	121 0	0 0 122	0 0	Swed., in kegs (rolled)	—	0
Do., refined	123 0	0 0 124	0 0	Ditto (hammered)	29 10	0 21 0
Barca	116 0	0 0 118	0 0	Ditto, in faggots	11 15	0 0
Straits	114 0	0 0 117	0 0	English, spring	23	0 0 25 0
TIN-PLATES.*	per box.					
IC Charcoal, 1st qua. <sup>1</sup>	£1 17 0	0 1 19	0 0	LEAD.	per ton.	
IX Do., 1st qua. ...	2 3 0	2 5 0	0	English Pig, com.	23 10	0 24 0
IX Do., 2d qua. ...	1 15 0	1 16 0	0	Ditto, L.B.	24 0	0 0
IX Do., 2d qua. ...	2 1 0	2 3 0	0	Ditto, W.B.	25 0	0 0
IX Coke	1 9 0	1 11 0	0	Ditto, sheet	25 0	0 0
IX Ditto	1 15 0	1 17 0	0	Ditto, red lead	25 10	0 0
Canada plates, p. ton.	21 0	0 0 21	10 0	Ditto, white	39 0	0 32 0
Ditto, at works	20 0	0 0 21	0 0	Ditto, patent shot	27 0	0 0
				Spanish	23	0 0 25 0
* At the works, 1s. to 1s. 6d. per box less.						
Terne-plates 2s. per box below tin plates of similar brand.						

**REMARKS.**—The markets all round have been unusually quiet throughout the week, and there has really hardly been anything doing; the recent failures in the lead trade still occupying a good deal of attention tend to throw a further gloom in the market, which was not particularly bright before the occurrence. The demand which by some was expected to arise upon the turn of the year has not as yet come, and may in consequence of untoward events be still delayed. Manufacturers are beginning to suffer severely from the continued decline in trade, and it would almost seem a matter of necessity in order to effect a resuscitation that prices should be reduced. Should this lack of orders still continue it must result in a decline in the price of coal and wages, which would then enable sellers to accept offers which under present circumstances cannot be taken without incurring a positive loss.

**COPPER.**—Throughout the week this metal has been only in very moderate request, and prices have been almost nominal, and have not exhibited more than a fractional variation. On Monday a small parcel of Chili bars, g.o.b., changed hands at 82 1/2s. cash; Wallaroo, 93 1/2s.; and Burra, 92 1/2s. Ore is quoted 16 1/2 to 16 3/4 per unit. On Tuesday g.o.b. was sold at 82 1/2s. to 82 1/2s.; Wallaroo, 92 1/2s. to 93 1/2s. cash, and 93 1/2s. one month; and Burra, 92 1/2s. cash. Wednesday's market was confined to a few transactions in g.o.b. at 82 1/2s. cash, and 82 1/2s. net; and Burra 92 1/2s. cash. On Thursday the market appeared a shade firmer. There were buyers of g.o.b. at 82 1/2s. cash, and 50 tons of picked brands sold at 85 1/2s.; Wallaroo quoted 93 1/2s., but before the close of the day there were sellers at 82 1/2s. To-day the market is very quiet, and prices unaltered. The business of the week is limited to about 400 tons Chili bars, and 200 tons Australian. Orders for manufactured are very scarce, and smelters are disposed to submit to trifling concessions. The market for yellow metal is quiet, and prices a shade easier.

**IRON.**—There is no change to report in the condition of the iron trade of the North of England during the past week. The market has been sustained, but has lacked activity. Sellers of pig-iron show no disposition to make any abatement upon current rates, which are much the same as a week ago. As regards finished iron, the trade shows some small measure of improvement, but the progress is very slow; indeed, were it not for the booking of a few orders for rails it would be difficult to say in what the improvement consisted. Up to the present time there are many works which are only partially employed, and some which have been closed for some time have not yet re-commenced operations. Notwithstanding this prolonged discouragement makers are still sanguine that as the spring advances trade will improve, and it is this feeling generally which causes prices to be maintained. The average price of rails is 10 1/2s. and 13 1/2s. 7s. 6d. for plates. The shipbuilding and engineering trades are more active than of late. The yards are generally busy, and prices are firm. It is somewhat disappointing to be building upon hopes of the future rather than present facts, but it seems that hopes are well founded and likely to be realised. The report from South Wales is even less satisfactory than that from the North of England. The works continue very dull, and many are only partially engaged. The maintenance of high prices is supposed to be the cause of this continued determination of buyers to keep out of the market. Were manufacturers to attempt any material reduction in their selling prices, it is said that they would do so at a serious loss, and here, as in the North, the market is sustained by the expectation that if a little patience is exercised orders will come dropping in, and that before very long, in sufficient quantities to afford support to prices. It is confidently believed that Austria and Russia must speedily be in the market. The exports of iron from the South Wales district during last month are barely up to half the usual average—not quite reaching 18,000 tons.

The Scotch pig-iron market opened firm on Monday, and transactions were recorded up to 107s., after which prices declined to 106s. 6d. At the close there were buyers at this price, and sellers at 106s. 9d. prompt. There was not much doing on Tuesday. Quotations stood at 106s. 6s. sellers, and buyers 3d. under. Wednesday's market was very quiet, and the tendency was to lower quotations. On Thursday there was a distinct fall, business having been done down to 105s. At the close there were sellers at this price, and buyers at 104s. 9d. To-day the market has been flat, and business done down to 104s., but at the close there were buyers at 104s. 3d.

SHIPMENTS.

Week ending Jan. 18, 1873. Tons 9,270

Week ending Jan. 17, 1874. 7,236

Decrease 2,084

Total decrease since Dec. 25, 1873. 11,724

**LEAD.**—The market has been so upset by the failures reported last week, and the result of the winding-up so uncertain, that but few transactions in this metal have taken place. Good soft English pig has been sold at 23 1/2s. 10s., and it is questionable whether any higher price can at the present be obtained. There must sooner or later be let free the stock which has been accumulated by these bankrupt firms; and until this is all disposed of there will, in all probability, be a very undecided market. At any rate, prices are not likely to rise; and inasmuch as these speculative buyers have been the means of fictitiously maintaining the market to a great extent, it is not improbable but that there may be a considerable drop before the market once again resumes its ordinary course.

**ZINC.**—Out of a parcel of 160 tons London rolled, 80 tons have been realised 30s. to 29s.

**TIN.**—The market has lacked activity, and prices, after having been upheld throughout the week, have at the close given way. On Monday an insignificant quantity of Straits changed hands at 119 1/2s. cash. Next day Billiton quoted 120 1/2s., at which 5 tons was sold; Australian, 115 1/2s.; and English, 117 1/2s. to 118 1/2s. On Tuesday rather more business was concluded, but at irregular prices. Straits was sold at 117 1/2s. to 120 1/2s. cash; Australian, 115 1/2s. to 116 1/2s. About 400 tons Australian ore was sold at 21 1/2s. to 17 1/2s. for common; 30s. to 55 1/2s. for fair; and 58 1/2s. 6d. to 72 1/2s. for fine. The highest price obtained was 75s. for one parcel. Some small lots of Barilla sold at 10 1/2s. to 65 1/2s. On Wednesday the market was less active, and more in request, at 9 to 9 1/2s. Tincroft, 38 to 40; Van Consols, 33 to 4; West Frances, 10 to 11; West Maria and Fortescue, 1-16th to

tions were few and unimportant; Straits, 119 1/2s.; Banca, 121 1/2s.; Australian, 114 1/2s. all cash, and in all not more than 17 tons. To-day the price of Straits has given way, and 117 1/2s. is named as the quotation for cash.

**TIN PLATES.**—There is no change. The market is quiet.

**COPPER.**—MESSRS. JAMES AND SHAKESPEARE.—No transaction is reported beyond an isolated lot of 100 tons Chili regulus at 16s. 6d. per unit. In bars we chronicle but 500 tons; consisting almost entirely of good ordinary brands (including Lota and Urmeneta) for cash at 82 1/2s. and 82 1/2s. 10s., the sales at the former price being invariably coupled with such conditions as to enhance the cost to the ultimate purchaser by at least 5s. per ton. A small lot, with a fixed prompt of three months, realised 83s. 15s.; and a moderate quantity of picked brands 85s. cash. Australian sorts have been equally neglected, and we note only 75 Burra at 92 1/2s. and 92 1/2s. cash; 80 Wallaroo at 92 1/2s. 10s. and 93 1/2s. cash, and 25 at 93 1/2s. 10s., delivered fixed three months hence. Despite of the dullness of the trade, the quantity of foreign offering for sale has been small; and though it would be difficult to effect extensive sales at the nominal rates, yet, on the other hand, purchases could not be made, except on a very moderate scale, even at the highest figures on our list. English is tolerably steady, but participants in the general dullness, and a few second-hand lots of raw are offering below smelters' quotations.

**TIN.**—MAKERS are open to sell English on easier terms, though leaving their official prices unaltered. Foreign is irregular, and there being large interests at stake both for a rise and fall, business has been reported at rather wide figures. Straits is the article chiefly dealt in on speculation, and the transactions of the week were mostly confined to this description, in which we note about 90 tons at 120s. down to 117s. cash, and 65 tons for arrival or forward delivery from 118s. down to 115s. per ewt. At the close it was difficult to name the exact quotations, but those we give represent the market as near as was possible to ascertain its position yesterday evening. Of Australian we believe about 50 or 60 tons have sold from 118s. down to 114s. per ewt., the whole of which was taken for consumption or export.

## REVIEW OF THE AMERICAN LEAD TRADE FOR 1873.

The most salient feature of the lead market in 1873 is the increased use of American lead for all purposes except corrodin, and the consequent decrease in the importation of ordinary foreign lead, which has been counterbalanced by a largely augmented home production. While Missouri has produced a little more than in previous years, and Galena its usual amount, the Nevada and Utah mines have been greatly developed, and worked with unprecedented energy. The percentage of gold and silver in the bullion produced by mines in these last-named territories is so high that the lead is of secondary consideration, so that the inducements for investing capital to work the mines of the Far West, and the probabilities of continued development, are greater than ever before; furthermore, that all the new smelting and desilvering works have been erected, so that all the base bullion produced during the coming year can be readily worked. It is also of interest to note that our very best Eastern white lead manufacturers have corroded several brands of desilvered American lead, and although the results have not been absolutely satisfactory, they have nevertheless given proof of such marked improvement, and have so nearly fulfilled all requirements, as to inspire the hope that at no distant time our lead will compete with the very best German and English refined brands, and that we shall rely solely on domestic resources for all qualities of pig-lead.

At the beginning of 1873 the stock of pig-lead in the New York market was estimated to be about 5000 tons, of which some 1500 tons were foreign lead. Early in March the bulk of the lead was concentrated in a few hands, and prices were advanced from 6 1/2 cents for dome-tie, and 6 4-10 for foreign, to 6 3/4 and 6 1/2 cents respectively. In April further large purchases were made by dealers of all the lead on hand in the New York market, including bullion, and prices were advanced to 6 1/2 cents and 6 3/4 cents for domestic, and 6 3/4 cents to 6 7/8 cents for foreign, at which the market remained firm and active for nearly six weeks, many sales being made at the high figures on time adding interest. Toward the end of May, when the roads at the mines became passable, the bullion again came forward from the West, when it reached 6 cents; foreign, however, remained a little firmer, and fell only to 6 1/2 cents. Toward the end of April the Government offered at public auction some 5000 short tons of re-melted lead from store at St. Louis, Philadelphia, and West Troy, of which some 2400 gross tons found its way to New York, being laid down here at about 6 1/2 cents gross; the balance of the lot was absorbed by the Western manufacturers. About the end of August all the lead on hand in New York, amounting to some 2300 tons, counting both domestic and foreign, were bought up at 6 cents and 6 3/4 cents respectively, and the price was again advanced to 6 1/2 and 7 cents respectively.

Trade was moderately active during the spring, excessively dull all summer, and revived in September, just as the price of pig-lead reached its maximum; but to ward the end of the month the terrible financial cyclone that took its rise in Wall Street, and spread over the entire country, paralysing almost every branch of business, had its effect on the lead market, checking consumption, and causing a steady decline in prices until the middle of November, when it reached 6 cents for domestic and 6 1/2 to 6 7/8 cents for foreign, at which figures we are brought to the close of a year that has been fraught with unusual vicissitudes and trials to all business men. We look forward, however, to a healthier tone for the coming year, and to unusual activity and prosperity in every department of trade.

New York, Jan. 1.

EDWARD A. CASWELL.

**AMERICAN IRON TRADE.**—The extraordinary depression which has overtaken the iron trade of the United States through the panic, and its effect upon railway building, is thus summed up in the annual circular issued by Mr. Edward Samuel of Philadelphia:—"The production of all kinds of pig metal in the country for 1872, as now definitely ascertained, amounted to 2,830,070 net tons, of which 1,369,812 tons were anthracite, 922,425 tons bituminous coal and coke, and 500,263 tons charcoal, 37,446 anthracite coke and coke, and 224 tons peat and charcoal. The total production exceeding that of 1871 by 917,482 tons. The estimated production for 1873 is 2,695,434 tons, showing a decrease of some 110,000 tons, the result of the panic. Fully one-third of the furnaces of the country are out of blast, so that if the present activity continues the accumulated stocks will be largely reduced, and prices being maintained will no doubt lead to a resumption of operations by many stocks now idle. In old rails and scrap iron the importations for the year have been remarkably light, probably less than 80,000 tons, showing a falling off of nearly 100,000 tons as compared with 1872. There are reasons to believe that the large trade in old rails done for several years past has about come to an end."

The MINING SHARE MARKET has been without any material change this week, and very little general business transacted. To-day a report was current that the tin standards had been reduced 2s., and tin mines, with a few exceptions, were offered at lower rates. The mines mostly dealt in have been Old Treburgett, Tankerville, West Chiverton, Prince of Wales, Wheal Creb, West Bassett, South Frances, Roman Gravels, Wheal Grenville, Wheal Uny



## NOTICES TO CORRESPONDENTS.

\* Much inconvenience having arisen in consequence of several of the Numbers during the past year being out of print, we recommend that the Journal should be filed on receipt: it then forms an accumulating useful work of reference.

**SARAWAK.**—In reply to your correspondent, "Stibium," in the Journal of Jan. 10, I beg to inform him that the office of the Borneo Company, of Sarawak, is in Fenchurch-street, London. The Borneo Company have the monopoly of working all the minerals (except gold) that are, or may be, discovered in Sarawak; consequently they are the only mining and smelting company in the settlement. Gold washing operations are carried on extensively in some parts of the settlement by the Chinese, but the quantity of gold they find is not large—in fact, it is not much more than sufficient to supply them with the necessities of life. The Borneo Company or the Sarawak Government are the only parties you could apply to for such an appointment as you are seeking.—HYDRAUGRUM.

**BROGWYNION.**—As one interested in this mine, I have in vain searched your columns for some account of what is doing there, but without finding any notice of it. Can any of your numerous readers enlighten the mining public in the matter? Many others as well as myself are waiting for the fulfilment of the very sanguine—shall I say, *too* sanguine—anticipation of the "substantial dividend" promised the shareholders towards the close of the last year by the managing director.—ONE OF THE DISAPPOINTED.

**STATE TRADE.**—"J. E. T." (Hay).—You will obtain the information you desire from "State and State Quarries Geologically and Commercially Considered," by Mr. S. R. Pattison, F.G.S., and "The State Trade of North Wales," by Mr. J. Kellow. Each pamphlet is published at 1s., and we will forward both by post on receipt of 2s. 1d.

**MINERAL WEALTH OF THE ISLE OF MAN.**—"D." (Ramsay).—The returns made to the Inspectors of Mines are, doubtless, more reliable than those made to the Office of Woods, which would, probably, relate to those only upon which dues had been actually paid; the correct figures, or at least the nearest estimate, for zinc ores for 1872 would, therefore, be—Ballacorkish, 118½ tons, worth 382, 13s.; Faloon Cliff, 9 tons, 27s.; Foxdale, 45 tons, 13s.; and Great Laxey, 3872 tons, 16,432, 7s.=4044½ tons, worth 16,964l. By taking the Office of Woods' incomplete returns (made for a totally different purpose) the reputation of the zinc mines of the Island is damaged to the extent of one-fourth of their produce.

**SURVEYING AND DIALLING.**—"G. S." (Wakefield).—We know of no work so well calculated to give you the knowledge you require as Hopson's Conversations on Mines, which we will forward you on receipt of 2s. 7d. The book is written expressly for practical men, and there are no words used which they cannot understand. The explanation of the mode of dialling occupies about 18 pages. There is also much useful information with regard to ventilation and various other matters relating to colliery working.

**TRAM FOR TRAM CARS.**—Referring to the enquiry of "J. L." (Hammersmith) in the *Mining Journal* of Jan. 10, as to whether any power other than that of horses had been used for the propulsion of tram-cars, Mr. S. S. Williamson, of Saundfoot, writes that patents have been secured for engines and boiler suitable for either tram-cars or traction-engines, and the boiler for consuming anthracite coal, so that there would be no noise or nuisance in the public street. As soon as the inventions have been practically tested the result will be made known.

**TALLEIN MINING COMPANY.**—"A Shareholder" should have taken the very necessary precaution of ascertaining whether the prospectus guaranteed that no allotment should be made unless a given amount of capital were subscribed. The 12 tons of lead stated in the letter of July 23, 1872, to have been sold at a fair price does not appear in the official statistics for 1872, although the name of the mine is inserted; perhaps it was sold during some previous working. We have received no notice of any public meeting of the company, or it would have been reported in the *Journal*. "A Shareholder" might enquire of the secretary how much capital was actually subscribed, though all seems to have been expended before July 23, 1872, but it will not relieve him from his liability to pay the calls due upon the shares he has himself taken. It frequently happens that where a company is formed with a capital of 30,000l., half for the vendor and half for working, that the allotment is made so as to give the vendor control of his fully-paid shares, and to relieve the directors of the responsibilities they may have undertaken when but very few shares are subscribed, and there is nothing absolutely illegal in the course, although the *bona fide* shareholders are sacrificed by it. The only effectual remedy would be for capitalists to refuse to subscribe to any company unless the prospectus distinctly states that no allotment shall be made unless at least three-fourths of the capital (exclusive of vendors' shares) shall have been subscribed before a given date.

**Received.**—"Economist"—"W. B. P."—A Subscriber" (Runcorn)—"W. S."—G. H. P."—A Shareholder" (Leeds).

\* With this week's *Journal* is published the TITLE-PAGE and INDEX to VOLUME XLIII. for the year 1873.

The space occupied by the Title-Page and Index has necessitated the postponement of several articles and letters intended for this week's *Journal*. Correspondents will kindly accept this intimation as explanatory of the non-appearance of their communications.

**AMERICAN SUBSCRIBERS.**—In reply to several enquiries, it may be stated that subscribers in the United States can be supplied with the *Mining Journal*, post free, at the price of \$8 gold per annum, payable in advance, by remitting to Mr. D. Van Nostrand, publisher, and importer of scientific books, &c., Murray-street, New York; or, direct to our Office, 28, Fleet street, E.C.

## THE MINING JOURNAL,

### Railway and Commercial Gazette.

LONDON, JANUARY 24, 1874.

#### THE TRADES UNION CONGRESS.

After a sitting lasting six days the Annual Congress of Trades, held this year at Sheffield, was brought to a close on Saturday last. More than 100 persons took part in the proceedings, amongst them being delegates representing upwards of 240,000 miners, and at the least 100,000 unionists connected with the various branches of the iron and steel trades. In the category of trades represented we also find railway servants and agricultural labourers, so that we will eventually have to extend the meaning of the word "trade" from its generally received sense up to the present time. The programme of business was certainly a most extensive one, but the actual work done of a really practical character, and the proceedings altogether, were not such as the great body of the working classes of the country need be particularly proud of. Of course, the press came in for its usual condemnation for seeing things in a different light to working men. This, indeed, was the actual commencement of the work of the Congress, for the first report read was that of the Parliamentary Committee, which stated, *inter alia*, that "they had continually to contend with misrepresentations in the press and on the platform." As we may be included amongst the offenders in connection with the former, we can readily believe that what most people would term fair criticism is put down by Trades Unionists as misrepresentation—a word very frequently used by those who have been worsted in argument. Reports of various other committees followed, including those relating to the Masters and Servants Act, the Summary Jurisdiction of Magistrates, the Law of Conspiracy, the Truck System, the Factory Nine-Hours Bill, Reduction of the Qualification of Jurymen, the Better Preservation of our Seamen's Lives, &c. &c. In fact, everything inside and outside of trade legislation was arranged for discussion. Mr. ROLLEY, of Sheffield, having been elected president, that gentleman on Tuesday gave the inaugural address, and in doing so touched upon a great variety of topics, one of them being the Contagious Diseases Act. He was most emphatic in manner, as he was original in his matter, and declared that "Trades Unionism was the blessedest of principles," and urged the necessity for sending to Parliament the "noble-minded" men they had in their ranks, so that the working men would be no longer "beneath the foot of the oppressor." The latter, we presume, are the employers of the workmen, and whose duty it is to find wages, if nothing else. He concluded his harangue by stating that as the working men had power, and knew it, the world should know they intended to use it. The report of the Parliamentary Committee was then taken up. This led to a great deal of noise and squabbling, many delegates speaking at the same time, and giving one a by no means pleasant idea of what a Parliament of working men would be, although the President in his address said "their parliamentary assemblage has become as great a consideration, in some respects at least, as the House of Commons, or the House of Lords." Several amendments, riders, and alterations were proposed, and with great difficulty order was restored, but not before Mr. CREMER, of international notoriety, had remarked that if the "same thing" had occurred in their local meetings they would be ashamed of themselves, "but there were a great many persons who were fond of hearing themselves talk."

Amongst the papers then read was one by Mr. CROMPTON, a young barrister, much devoted to Trades Unionism, probably from a lack of more profitable employment, upon the memorial presented by the National Federation of Associated Employers of Labour. The paper, of course, was from the workmen's stand-point, and the Criminal Law

Amendment Act, with the Law of Conspiracy and other Acts, were freely handled. With regard to "picketing," Mr. CROMPTON remarked that a law which said that "any person standing in the street shall be punished is obviously unjust." No doubt it is so, unless he is there for an unlawful purpose, which makes all the difference in the world. As the question of picketing is undoubtedly very important, we find, on looking into the matter, that a greater authority than Mr. CROMPTON has paid considerable attention to the subject. Sir W. ERLE, in connection with the report of the Royal Commission on Trades Unions, in 1869, says that "any act that obstructs the exercise of any right, if done for the purpose of obstructing, would, if damage was done thereby to the party obstructed, be a violation of the law." It is equally a wrong, he says, "whether it be done by one or many, subject to this observation, that a combination of many to do a wrong in a matter where the public has an interest is a substantive offence of conspiracy. It is equally a wrong whether the obstruction be by means of an act unlawful in itself on the part of the party obstructing, or by means of an act not otherwise unlawful." As a matter of right there must be entire freedom in the disposal of either labour or capital, and any obstruction to either cannot be tolerated, notwithstanding the very mild form in which picketing is put forward by Mr. CROMPTON. We suppose that the law is well known by that gentleman, and that its fairness is admitted by all unprejudiced persons.

But leaving the subject of intimidation, as practised by picketing, we are at a loss to find why there should be such a great objection, such a dead set made against the federation of employers and capitalists by a vast association of labour boasting of its power to overturn almost everything, to return its own members to Parliament, and to sweep away all laws from the Statute Book they consider inimical to their interests, as well as those that are not. Their power, as the President said, is great, and they mean to show the world they can use it in their own interests. With such a boast, surely it is not at all surprising that the employers of labour, and who have to find the wages by which such great things are to be accomplished, should also form an association to look after their own interests, when they find that those who are really dependent upon them desire to become their masters. The Trades Unions have wielded a very great power, with anything but discretion, and, consequently, to their own loss as well as to the loss of their employers. The leaders of the Unions have set at defiance all the recognised principles of political economy, and which they have been compelled to admit. This has been pointed out in the report of the Trades Union Commission, in which, in answer to questions, it was admitted that the "general policy is to take advantage of a brisk trade to insist on a rise of wages, and when trade is slack to resist a fall." And, further, we have it reported that "in many cases leaders of Unions fail to consider whether the circumstances of trade are such as to call for or admit of a rise in wages. It is with them rather a question of the relative strength of the two parties." Those are matters, however, which such men as Mr. CROMPTON, whose views are in every way *ex parte*, are not likely to look at. But it is in consequence of such a state of things existing, and being carried out, that a federal union of a large number of the employers of labour has taken place, for the sole purpose of preventing any unfair advantage being taken by their workmen, or the leaders to whom they transfer their own rights and power. For our own part, we consider that the federation of the employers of labour, banded together for the purpose of maintaining their own rights, and with no desire to become aggressive, will be of advantage, not only to themselves, but also to the intelligent workmen who wishes to act for himself, and have that liberty which belongs to every working man who is not the slave of an Association. But we see no reason why working men should assume to themselves a monopoly of combination; at the same time, we do not see that they have anything to fear from their employers following in their footsteps; the only surprise being that they did not do so many years ago. For our own part, having paid a good deal of attention to the matter, we think that the federation of capitalists is eminently calculated to put an end to strikes and serious disputes, for we believe in the maxim that "to maintain peace it is desirable to be prepared for war."

The trades' associations and the employers' league, like two opposing forces aware of each other's strength, will not be desirous of commencing hostilities, and will be willing to accept the offices of a mediator when such shall be deemed necessary. The two bodies will also be able to come to terms on many minor points, so as to avoid all interruption to trade. Greater freedom, as we have before stated, will be given to the skilled workman, for in many trades we know that it is the rule to pay the expert and the unskilled labourer the same wages, a system which Mr. STUART MILL says "is not only pernicious, but a public mischief."

Another important question discussed at the Congress was the forcing of a levy on all unionists, for the purpose of sending working men representatives to Parliament. The matter was, of course, warmly supported by those men who have already been invited to stand for different places. On the other hand, as might have been expected, it was opposed by those who were not so fortunate as to be impeded to become candidates for places where the electors were burning with impatience to return working men as their representatives. The resolution in favour of the levy was lost, each district or association being left to act for itself in the matter.

The last day saw a great deal of business cleared off, and but little speaking was done. But it was reserved for Saturday to see a most monstrous proposition made and agreed to. It was that all taxes should be levied on realised property—or that the frugal and provident should be taxed for the benefit of the well-paid and spendthrift working man. Or, to put it in another way, that the man who had saved just enough to subsist upon in the evening of his days, and the widow with her family of three or four little ones, with her 1l. or 2l. week with which to support them, should be taxed, whilst working men—many of them earning 5l. or 6l. a week for less than 50 hours' labour should be left off scot-free. That such a resolution should be carried unanimously speaks but little for the morality or the sense of justice which belongs to those who presume to the title of being the most intelligent, as well as the leaders, of the working man. Any comment of ours would be superfluous, and so we leave the closing act of the Congress to speak for itself, as showing what we might expect were the power of legislation placed entirely in the hands of the representatives of the trade associations of the kingdom.

#### THE KAINOTOMON ROCK DRILL.

Since our last notice of this drill, when it was exhibited and worked before the meeting of the Royal Cornwall Polytechnic Society, in August last, and where it was unanimously awarded by the judges the 1st medal, we learn that the subsequent sales have corresponded to the high opinion we then formed of it. "Kainotomon" drills have been sold in England, Scotland, Wales, Ireland, Germany, Sweden, Saxony, Austria, France, Belgium, Switzerland, and Spain, and they have universally given great satisfaction. We have been shown a number of letters from purchasers; among others, Mr. Torrance, of the Midcalder Lime Works, near Edinburgh, speaking of the "Kainotomon" drill, writes on July 31, 1873:—"I may say the boring machine works splendidly." And again, Sept. 9, "It is working every day." Mr. Torrance's opinion is of value, as he has tried several rock drills. The Lanemark Coal Company, who used the drill for sinking a shaft, write on Oct. 9, 1873:—"The 'Kainotomon' will be a success, and our man, after boring two or three holes, could work it easily." And again, on Dec. 13: "We are quite satisfied that there is a very considerable saving in money and time by using it in hard rock, as compared with hand-labour. In wear and tear of jumpers and smiths' work the saving was very great."

This drill has also been successfully tried where hand-labour was useless. At the Bigrigg limestone quarries, where, from the jointy nature of the rock, it was found impossible to profitably work by hand-labour, the "Kainotomon" drill bored large holes of 2½ inches diameter, at the rate of 18 inches in 5 minutes, in very hard rock, and notwithstanding all the irregularities in boring through joints and fissures, a depth of 70 inches was attained in 70 minutes, including all stoppages for changing drills, &c.

The following is the result of experiments at Crewe, made in the presence of engineers of the London and North-Western Railway,

with the "Kainotomon" drill, Aug. 7, 1873, in hard mountain limestone, diameter of steel drill 1½ inch:

Steam pressure.	Depth bored.	Time.	Rate.
50 lbs.	15 inches	2½ minutes	5s per minute
50 "	15 "	2½ "	5s "
60 "	15 "	2½ "	5s "

At the Royal Mines of Prussia two of these drills have been at work for the last six months, *without any repair*, in shaft sinking. The managers of the mines were so satisfied that they have now given orders for four more "Kainotomon" rock drills, and an air-compressing machine to drive them. We also understand that this rock drill has been tried at the St. Gotthard Tunnel, in Switzerland, where it has met with the approval of the engineers, and is likely to be largely adopted.

We have before called attention to the extreme simplicity and handiness of the "Kainotomon" drills. These qualities appear to be fully appreciated by those who have purchased machines, and we have no doubt that as these drills become better known the employment of them will be largely extended.

#### THE MINERAL WEALTH OF IRELAND.

Although the development of the mines of Ireland has always been seriously impeded, owing to the very inadequate amount of capital which has been brought to bear upon them, the recently published statistics for 1872 show that considerable progress is being made, and that there are inducements for capitalists quite as great as those which have sufficed to attract vast sums in other directions where experience has proved that British capitalists cannot obtain profits. During 1872 the value of the minerals raised in Ireland was nearly 300,000l.—an enormous amount considering the working capital which has been in use, although it may appear small when compared with the figures representing the mineral produce of the entire kingdom; and when the number of mines in operation is made an element in the calculation no doubt can remain that if the same amount were sent into Ireland as has been fruitlessly expended by English companies in the mines of America, Ireland would well repay the outlay. Let us see what the several descriptions of Irish mines have done, and whether the result does not justify the most favourable anticipations with regard to the future.

There were only eleven copper mines at work, yet they produced 8019 tons of ore, containing 686 tons 5½ cwt. of fine copper, of the value of 58,428l. 18s. But two lead mines were in operation, yet they returned 962 tons of lead ore, containing 726½ tons of lead and 1040 ozs. of silver, worth together about 13,500l. The single zinc mine at work yielded 634 tons of ore, worth 1993l., whilst four iron pyrites or sulphur mines gave 42,950½ tons of ore, of the value of 23,265l. 2s. 6d. Of iron mines there were but 19 in operation, yet from these were produced 176,550 tons of ore, worth 158,532l. 10s.; and the 29 collieries in operation during the year yielded 103,463 tons of coal, which at the low estimate of 7s. 6d. per ton would be worth 38,799l., raising the total to 294,549l. from 66 mines, all of which are worked with little more capital than that obtainable from the ores produced. May it not be hoped that the consideration of these figures will cause Irish mining to receive greater attention?

#### DEVELOPMENT OF THE INDUSTRIAL RESOURCES OF IRELAND—THE IRISH CORPORATION.

A company is in contemplation, with a capital of about 4,000,000l., of which about 250,000l. will be first issued, for facilitating the development of the industrial and commercial resources of Ireland, and as the enormous extent of these has long been recognised, there can be no reason to doubt that a judiciously constituted company, conducted by men intimately acquainted with Ireland and Irish affairs, and possessing adequate capital and the confidence of Irishmen, could do a vast amount of good. The promoters of the present undertaking are Messrs. Mason, Sons, and Knight, engineers, mining agents, and surveyors, of New Bridge-street, Blackfriars, and it is explained that the sources whence the corporation look to derive its income are from loans made for the development and working of the minerals of the country, from loans made for the formation of railways and other means of intercommunication, loans for the formation of docks, harbours, &c., and also from loans made to various local corporations on security of their rates, tolls, dues, &c.

The successful working of the Irish affairs is at present simply impossible, from the lack of capital which can be brought to bear upon them, and they hold that an association of the character described will supply this pressing want, and will in itself prove most remunerative to its members, and an incalculable blessing to the country. The success of such an enterprise will, of course, depend upon names and ability of gentlemen connecting themselves with it, but we understand that a prospectus will shortly be issued, and we shall then be better able to pronounce an opinion upon the practicability of the undertaking.

#### AMERICAN MINING MARKET.

We understand that a number of valuable mining properties are about to be offered to our investing public. Syndicates are busily organising, and it is expected that a lively business will be transacted during the next six months. The *Mining Journal*, far from discouraging the introduction of mining schemes upon the London market, which has of late experienced so frequent disappointments in consequence of the failure of leading mining companies in paying long-promised dividends, is well determined not to recommend any property which has not been examined and thoroughly investigated by competent and reliable men, having the full confidence of English investors.

The forthcoming mining campaign is probably to be inaugurated by the early introduction on the London and other financial markets of the Great Ortiz mine grant of New Mexico. The magnitude of that enterprise, to which it was previously alluded in these columns, is such that upon the success or failure of its introduction will depend the issue of the opening campaign. There is nothing so far which can create any doubt of its success, as it is to be brought out strictly upon the terms of protection advocated by the *Times* and the *Mining Journal*, in conjunction with the recommendations suggested by the Mining Bureau, whose president, Col. Berton, was instructed by English capitalists to examine the Ortiz property, and to have it reported upon by a competent engineer, duly appointed and acting under his personal direction. From what we know of the result of the examination and of the terms agreed upon for the successful negotiation of that extraordinary property, which consists of an area of about 80,000 acres of rich mineral land, it results that, owing to its magnitude and that of the capital stock, which is to be 1,000,000l., all questions of management will be entirely left to English investors and shareholders, the vendors of the property to receive shares only in payment thereof in order to ensure full protection to the invested capital.

As soon as the prospectus and other documents concerning the Ortiz mine grant have been submitted to us we shall express our views upon the merits of the enterprise, relying entirely in the meantime upon the measures of protection, as suggested by the Mining Bureau, the London branch of which is at the office of Mr. J. Elkin, Great Winchester-street-buildings, where all communications to Col. Berton can be directed.

Berton, and that a copy thereof be forwarded to the newspapers, and also to the Minister for Foreign Affairs at Paris.

**EXPORTS OF TIN-PLATES.**—The exports of tin-plates from the United Kingdom in December were about an average, having amounted to 7494 tons, as compared with 6981 tons in December, 1872, and 9366 tons in December, 1871. In these totals the United States figured for 4665 tons, 4874 tons, and 6189 tons respectively. The aggregate exports of tin-plates last year amounted to 120,468 tons, against 115,083 tons in 1872, and 119,606 tons in 1871. In these totals the United States figured for 85,531 tons, 87,360 tons, and 86,929 tons respectively. The value of the tin-plates exported in December was 228,549/-, against 227,204/- in December, 1872, and 237,796/- in December, 1871; and for the whole of 1873, 3,952,841/-, against 3,806,973/- in 1872, and 2,900,625/- in 1871.

#### REPORT FROM CORNWALL.

**Jan. 22.**—The one event of the week is the very satisfactory report which was presented at Dolcoath account as to the condition of that famous mine. The deeper it goes really the richer it appears to get. The sump-shaft, which has not been worth anything for the last 80 fms. sinking, is now worth 50/- a fathom, and the various points in operation make up a total of 755/- Take this in connection with the rich run of tinstuff in the bottom level, which is crushed and sent off to the smelters without dressing, and there really appears to be no limit to the wealth of this wonderful concern. Mr. West's joke that he thought the Australian tin must have slipped out of the bottom of Dolcoath was a decidedly happy one. No mine could afford more encouragement to vigorous prosecution in depth, and it may be the part of Dolcoath to solve the problem as to the nature of the substance or substances whose specific gravity is so much higher than that of the ordinary crust of the earth, and which should be reachable somehow, to which Mr. Hunt alluded some months ago at a South Caradon account.

So Capt. Boyne has again resolved to stock. It has paid him before, and he is so shrewd an observer of the signs of the times that we should not wonder if other managers were to follow his example. The difficulty which lies in the way of the adoption of such a course in most of our mines is the want of sufficient floating capital. Many thousands of pounds have gone into the pockets of the smelters because they have been able to afford to buy, whilst the mines, living from hand to mouth, were compelled to sell. Almost as much as great improvements in dressing apparatus, and greater economy in working generally, we need a financial reform—something that will adapt our too much antiquated system of accounts to the need of the present times. Why should it be that the system of book-keeping should be the only thing that time has spared in connection with our mines' management? Practically it comes to that, and, indeed, where changes have been introduced they have for the most part exhibited very little improvement. There are two great blunders committed. One is sticking obstinately to the old ways, and the other in recklessly insisting on introducing new ones, heedless of the important considerations of the peculiarities alike of the conditions of the industry and of the locality. The man does not yet seem to have arisen who has struck the right middle course.

West Chiverton adventurers have agreed to the terms of the lord, and will pay 675/- as a premium on the renewal of the lease. Many people will be apt to think that the justice of the demand is proven by the fact of its having been met. But, on the contrary, it proves nothing of the sort. It only proves, as one of the adventurers present at the meeting when the question was decided said, that they were in the lion's mouth, and could only hope to get out of it by paying. It was simply a choice of evils, so far as the mine was concerned, quite a question of "Your money or your life." The shareholders have preferred to keep the mine alive if they can, and, no doubt, they have decided wisely. But what prospect have they of the reduction of dues which they seek? They may get it, but the exactation of the renewal premium is not an encouraging fact.

Mellanear is to be re-constituted and worked vigorously, it is said. It would have been pity if a mine with such prospects had been allowed to drop; but let us hope that the present body of shareholders will have sufficient faith to go on, and that the Great Wheal Basy *flasco* will not be repeated.

It seems at length as if some check will be put to the system of migration to other mining districts to fill the places of men on strike, which has been so long customary in the county. At a meeting held at Redruth it was decided that Cornishmen should keep away from Burnley. Of course, this only applies to those who took part in the meeting; but there is also a talk of a Union being formed. It is not very easy to see what the men can expect to gain by this, the difference in the conditions of Cornish and coal mining are so many and so great.

#### REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

**Jan. 22.**—The Iron Trade of South Staffordshire remains in a quiet state as to demand, but there is no indication of any early reduction in quotations. Pig-iron is in steady request at the standard of 7/- to 7.10s. for all-mine, 5/- 15s., to 6/- for part-mine, and 4/- 10s. to 5/- for cinder, hot-blast, with the usual extras for cold-blast and charcoal makes. The manufacturers of finished iron have a scanty supply of orders, and the majority of the mills and forges are only in partial operation. Marked bars of B.B.I., and other first-class brands, continue to be quoted at 14/- per ton, but second-class bars of fair merchantable quality are freely offered as low as 11/- 15s. per ton. Ordinary sheets (singles) are selling at 13/- 10s. to 14/-, and the rates are proportionate for rods, strips, hoops, plates, and angles of corresponding quality. The advance of 10s. per ton noted last week in the price of galvanised iron roofing sheets is steadily sustained, and there is still a tendency to firmer quotations, as the result of an association of the manufacturers now in course of formation.

Coal in South Staffordshire steadily maintains its price, but the demand continues quiet, and numbers of the collieries are only in partial operation. West of Dudley the prices are:—Best thick-coal 23s.; common, 18s. 6d.; lumps, 17s. 6d.; and slack, 9s. per ton, and the rates are proportionate for other qualities. On the Wolverhampton side of the district the coal masters are seeking orders, and some of the smaller firms are making slight concessions, but not in sufficient numbers to influence the general market. In the neighbourhood of Essington some of the small firms have this week reduced the price of their best house coal from 20s. to 18s. 4d. per ton at the pit's mouth. Native ironstones are in steady demand, and prices are firm at 25s. to 26s. per ton for white and gubbin in their raw state, with the usual extra for calcined samples.

The Conduit Colliery Company, at Hednesford, in the Cannock Chase district, of which Mr. Allcroft is the manager, are putting down on a large and enterprising scale new ventilating apparatus. A new engine-house and a shed for the fans to work in are now in course of erection from designs supplied by Mr. J. R. Veall, architect, of Wolverhampton.

A new joint-stock company will be launched for the purchase and development of an important mineral estate in the centre of the Cannock Chase district.

The annual meeting of the Dudley Institute of Mining Engineers was held on Monday [a full report of which appears in the Supplement to this week's Journal]. Mr. John Field, of West Bromwich, was elected president for the ensuing year, vice Mr. W. Blakemore, of Heathtown, whose term of office had expired. The Council of the Institute had agreed to offer a prize of 20/- for the best model of a hand coal-cutting machine. A valuable paper was also read by Mr. T. Parton, F.G.S., on the economic extraction and combustion of fuel, based upon the report of the Royal Commission.

In the North Staffordshire district the Iron Trade is, on the whole, steadier than last reported, but the activity at the mills and forges is not of very marked extent, and some of the furnaces are laid off. Crown bars are firm at 12/- per ton. The price of pig-iron and ironstone is well sustained at last quotations. Coal is in plentiful supply, but there is no change in the standard of prices.

The annual meeting of the South Staffordshire and East Worcestershire Chartermasters' Friendly Association was held at Tipton, on Tuesday, and

a satisfactory financial report was presented. The association numbers 100 members, and its objects are to afford necessary legal assistance and protection to the employer against improper aggressions and pretensions, unjust claims and demands, illegal combinations, and other improper proceedings, and conduct of or by the employed, and at the same time to discourage and oppose any oppression of the working man, and to render him his just and legal rights, with the view of bringing about a better understanding between the employer and employed, and also to further such measures as may from time to time be considered advisable for the interests of the trade.

The directors of the Metropolitan Railway Carriage and Wagon Company have declared an interim dividend at the rate of 10 per cent. per annum, free of income tax, for the half-year ending Dec. 31 last.

The directors of the Patent Shaft and Axletree Company are about to pay their usual interim dividend, at the rate of 15 per cent. per annum, on March 1 next.

At Wolverhampton Police Court Mr. T. Brettell, manager of the Albert Colliery, Darlaston, pleaded guilty, and was fined £1. and costs, for neglecting to provide proper ventilation, in consequence of which an explosion occurred whereby two lives were lost.—Mr. William Spruce, manager of Old Park Colliery, near Dudley, was charged with permitting the use of iron tamping rods, but the stipendiary deferred his decision, owing to lapse of time since the offence. The lenient manner in which Mr. Baker is endeavouring to enforce the Act in his district is giving great satisfaction, and will tend much to cause it to be respected.

**ALLEGED LIBEL BY AN INSPECTOR OF MINES.**—At the Wolverhampton Petty Sessions, on Wednesday, before Mr. I. Spooner, Stipendiary, Mr. H. Underhill, the Town Clerk, applied on behalf of Mr. Henry Johnson, mining engineer, of Dudley, for a summons for an alleged libel against Mr. J. P. Baker, Her Majesty's Inspector of Mines for South Staffordshire and East Worcestershire.—Mr. Underhill, in making the application, said his client was desirous of bringing the matter before the Court, inasmuch as it bore considerably upon the administration of justice. He reminded the Stipendiary that, under the Mines Regulation Act, a case had recently been decided by him against Mr. Laitham, in which Mr. Johnson was the principal witness for the defence. The public importance of the application was manifested by the fact that it directly affected the manner in which evidence in future would be tendered.—Mr. Spooner: But as the charge involved is against Mr. Baker, who holds so responsible a position, I think it would be far better to communicate direct with the Secretary of State.—Ultimately the consideration of the application was adjourned for a week.

#### REPORT FROM SCOTLAND.

**Jan. 21.**—The Warrant Market since the date of our last report has been somewhat irregular, fluctuating between 105s. and 107s. 6d., with a fair amount of business, closing on Friday at 107s. On Monday the market opened at 106s., advanced to 107s., and closed buyers 106s. 6d. Yesterday and to-day the tone was quiet, and only limited business done, from 106s. 6d. to 106s. 3d. cash, closing buyers at better price. The undertenored prices for makers' iron again show some slight reductions as compared with those of last week:—

No. 1.	No. 3.
Gartsherrie ditto ditto	107s. 6d. 105s. 6d.
Coltness ditto ditto	113 0 107 6
Summerlee ditto ditto	116 0 108 0
Carnbroe ditto ditto	112 8 106 0
Monkland ditto ditto	110 6 105 6
Clyde ditto ditto	107 6 105 6
Govan, at Broxburnlaw ditto	107 6 105 6
Langloan, at Glasgow ditto	112 6 107 0
Calder, at Port Dundas, ditto	112 6 107 6
Glenarmark, at Ardrossan ditto	112 0 107 6
Eglinton ditto ditto	107 0 105 0
Dalmellington ditto ditto	107 0 105 0
Carron, at Grangemouth, selected, ditto	112 8 108 0
Shotts, at Leith ditto	112 6 108 0
Kinnel, at Boness ditto	107 6 103 6
Bar iron	£13 0
Nail rods	13 0
SHIPMENTS.	
Week ending Jan. 18, 1873.	Tons 9,270
Week ending Jan. 17, 1874.	7,236
Decrease	2,034
Total decrease since Dec. 25, 1873.	11,724
Imports of Middlesbrough pig-iron into Grangemouth:—	
Week ending Jan. 17, 1874.	Tons 3,050
Week ending Jan. 18, 1873.	1,032
Increase	2,018
Total increase for 1874	4,390

The prices of hematite ore have not advanced as was expected, and with the exception of a solitary port—Santander—the supplies from Spain have been suspended. Smelting is not progressing here to any large extent, but the furnaces are kept well in blast, and the outcome of the year is expected to exceed that of 1873. A fair business is being transacted in Malleable Iron, which is expected to be exceeded as spring approaches; and as the machinery is well employed, a tendency to better prices is being approached. A reader market is also being found for Finished Iron, and the Messrs. Baird, of Gartsherrie, have nearly completed an erection for the manufacture of their coal-cutting machines at Sunnyside Station, on the Coatbridge line. Rochsloch works, after undergoing repairs, have been started anew. The decline in the price of fuel is influencing the market and bringing out orders. Quotations unaltered from last week. The reduction in puddlers' and millmen's wages has met with no opposition.

Coals are falling in price, and this, unfortunately, has had no effect on the market. In the week just closed the exports were 26,422 tons, against 11,427 tons in the same week of last year. The general tendency of prices is to a decline, and both in Lanark and Ayrshire prices have had to be reduced to meet buyers' terms. Colliers' wages are also being slowly brought to a lower level, and there is the appearance of this being accomplished without much disorganisation or striking. At the Excelsior Ironworks, Wishaw, the strike has been brought to a close entirely in favour of the company, after a loss of about 4/- per man in wages. In Fifeshire coals and miners' wages are being reduced simultaneously. The East Coast trade is quieter, and the shipping consignments are being reduced to a minimum. Dross and coals are cheaper by 2s. per ton, and this is the case generally in the coal-producing area of Scotland.

Messrs. Walker and Stewart have recently taken possession of the Templeland Pit, Dalry, where they propose working household coal. Already a certain quality of their coal is in the market, which is sold at a figure much under present depot price. It is understood that when their operations are more advanced a good quality of house coal will be had at a reasonable price.

We understand that Mr. Robert Henderson, of Drumpellier Ironworks, has purchased the estate of Dundydyan, lately belonging to the Messrs. Wilson, who carried on the well known ironworks upon it.

Coal oil and petroleum keep depressed, and prices are wholly unremunerative. Shale oils, 11d. to 12½d. for standard, and find a ready sale at 16s. 15s. to 19s. per ton.

Our Share Market has been pretty buoyant lately, and mining shares have improved. Canadian Pyrites to 65s., Emmas to 75s., and although Tharsis have fallen it is expected to be only temporary.

#### TRADE OF THE TYNE AND WEAR.

**Jan. 22.**—There is no particular movement in the Coal and Iron Trades, the coal trade being remarkably quiet; yet a good business continues to be done in most kinds, and prices are rather stiffer for steam and house coals. The continued mild character of the winter has, however, had a depressing effect upon the house coal trade. The demand for steam coal at Blyth and on the Tyne is excellent, and as the Baltic is expected to be opened early the prospect for that trade is extremely good. A new shaft of large size is to be sunk by the Cowpen Coal Company, which will still further develop that already extensive concern. The Stannington Coal Company are also advertising for tenders for sinking a large shaft. The state of the coal and coke trades in Durham may be described as extremely quiet, only one reason for which can be assigned, and that is that the demand barely equals the supply, or perhaps it is a little below it. The men are turning out good supplies of coal, and in Cleveland they are also turning out good supplies of ore. During the past year the attention of viewers and mining engineers has been especially directed to the output of an increased quantity of coal—that is, to make, if possible, the quantity drawn at each shaft according to the present system in ten hours equal to the quantity formerly drawn in twelve hours, and this has been nearly accomplished in many instances, even with the engines formerly employed, simply by reducing the amount of time expended at the top and bottom of the shaft after the accomplishment of each journey. When old shafts are used of small size it is necessary to draw several wagons by so many platforms, or stories, and an ingenious contrivance is about being introduced here for the purpose of effecting the delivery of the full tubs and replacing the empties in a much shorter time, and with less expenditure of hand labour, than formerly. This apparatus is in actual work with the best results in the Midland Coun-

ties, but the precise locality we cannot at present give. It is, however, known as "Fowler's Patent Hydraulic Winding Gear." It is stated on good authority that in a great number of cases the output will be increased by using this apparatus 200 tons per day. It is also stated that the cost—that is, the wear and tear of ropes—will be much reduced by its use. This is extremely probable, as the cages are moved by means of hydraulic power, independent of the engine—that is, while loading and unloading at the top and bottom of the shaft; and this is effected not in rotation, but the tubs are changed simultaneously, so that with a cage of four decks the saving of time effected at each draw amounts to no less than 45"—a very important saving indeed. This apparatus has been introduced here by Mr. Morison, M.E., Collingwood-street, Newcastle, and he is now erecting it at the St. Hilda Collieries, South Shields, under the management of Mr. May, and it will doubtless get a fair trial there.

The raw Iron Trade continues very quiet, although a good business has been done lately in pig; but the opinion is pretty generally expressed that the present prices will not be long maintained. Whether this opinion rests on a good basis we cannot say, but metal merchants generally entertain it.

Sinkings and borings continue to be made, not only in vacant coal fields not previously occupied, but also to greater depths below the seams that have been worked for ages in the county of Durham. The Busty seam was got some time ago at the Felling Colliery, about 50 fms. below the Hutton seam, which was long considered to be the lowest workable seam of any value in East Durham, and lately a boring has been made by machinery at the Usworth Colliery, and it is stated that the Busty seam has also been found there of good quality. This is certainly very important, as it is several miles south of Felling. At Urpeth, on the west side of the famous wash which takes all the seams off down to the Hutton seam, the Busty seam has been proved, and is now being worked successfully; and the Ouston Coal Company, the owners of the Urpeth Colliery, have now a shaft pretty far advanced on the Black Fell, east of the wash referred to, which is to be put down to work the Busty seam also. This latter shaft is situated about four miles south-west from the Usworth Colliery. It will, therefore, be seen from this rapid glance that this famous seam is almost certain to be found over the greater part of the coal field in East Durham; a very important circumstance in connection with the duration of this coal field.

**COAL MINES EXAMINATION.**—I have seen enquiries from correspondents as to the course pursued at the examination for certificates of competency; this will be well understood from the following particulars of the proceedings of an "Examination" at Darlington. The candidates—17 in number—came from various parts of the district under the jurisdiction of the South Durham Board, which comprises the Whity, Cleveland, Westmoreland, and South Durham mining districts. The examination was conducted by Mr. J. Daglish, M.E., of Tynemouth; Mr. A. L. Stevenson, M.E., of Durham; Mr. John Forman, of Grahamsley. The secretary of the board, Mr. Bartlett, jun., was also present. The qualifications necessary to be possessed by the candidate require either a lengthened practical experience in mining work, such as having served for a term of five or more years in some position similar to an underviewer or overman; or where professional experience has been obtained, a somewhat shorter period of practical experience is admissible. In the case of students at the various Colleges of Physical Science, evidence of their attendance at such institutions is accepted as the equivalent of some portion of the professional training. Very stringent testimonials are prescribed as to the character and fitness of the candidates for the post of mines' managers, which the successful passing of this examination holds out to them. The subjects of the examination comprised the geology of Northumberland and Durham, especially in reference to the coal formation; the practice and theory of ventilation, and the nature and properties of gases; the practical knowledge of the machinery and boilers generally in use at collieries; underground surveying; practical mine working; an acquaintance with the provisions of the Coal Mines Act of 1872. The examination lasted upwards of eight hours, in addition to which each of the candidates underwent a *civa vice* examination.

#### REPORT FROM LANCASHIRE AND CHESHIRE.

**Jan. 22.**—During the past week the demand for coal has improved slightly, but trade continues dull. Price have not been altered; there seems, however, every probability of further reductions. For some of the better qualities of coal the requirements are still not more than met; of inferior sorts there is an abundant supply, and at many collieries stocks are rapidly increasing. The labour market is settled, except at Haydock and Burnley, where the disputes continue without the slightest prospect of settlement. The long fight at Burnley and the pertinacity with which the colliers are adhering to their demands at Haydock are beginning to have an effect upon the relationship of capital and labour throughout the district. The men have the notion that because they have held out so long at Burnley, and have so nearly gone on strike at Haydock, a general turn-out would be quite as simple a matter. At Ashton and Oldham, where a reduction of wages was announced, the parties concerned have sensibly referred the matter to arbitration.

In the Iron Trade prices are a shade firmer for foundry pig-iron, for which the demand is considerably better. Manufactured iron rates are lower, without much sign of improvement. For iron ore there is still much request. Engine makers are busy, but tool makers and machinists complain of a scarcity of orders.

An inquest was held at Pembridge, near Wigan, touching the death of a sinker named John Waring, employed at Mr. N. Eckersley's Worsley Mesnes Colliery

the shafts will be about 500 yards. The Blackwell Company, at Normanton, are going down to the Top Hard seam, and there is some talk of opening out to the dip of the Clifton Colliery, which is situate close to the town of Nottingham, with a view to deciding the question as to whether the coal measures will be found to proceed in the direction of the Vale of Belvoir. At Newstead Abbey the Thick coal is being sunk to in a field of 5000 acres, and the same seam is being opened out at New Watnall. The Mansfield district is also about to be developed, there being a very extensive field of coal lying to the east of the town as well as to the north, proceeding towards Doncaster, near to which there is an immense virgin field of coal about to be broken into. The proposed line from Mansfield to Worksop will aid materially in opening out a vast tract of highly mineralised ground, so that collieries will be opened out on a straight course of from 30 to 40 miles. As the production at the many new collieries being opened out in Nottinghamshire is estimated at 1000 tons a day, and is the present output of the 28 collieries in Nottinghamshire, is at the rate of 2,500,000 tons a year; no great time will elapse before that quantity is increased to more than 4,000,000 tons, whilst the Doncaster field, with its many thousand acres of fine coal, will also add largely to the production of the country.

#### REPORT FROM MONMOUTH AND SOUTH WALES.

Jan. 22.—There appears to be some slight movement in the Iron Trade this week; it is not much to speak of. Still the little improvement that has taken place has tended to strengthen makers' confidence in the future. Some of the home railway companies are beginning to enquire for rails for re-laying and extensions, and some good orders have already been booked by rail makers, but it is believed that the bulk of the orders are to come. The traffic on nearly all the railways has increased considerably of late, and the revenues in proportion, so that there is little doubt that re-laying will be more extensively carried out than for some time past. It is probable, also, that when the market becomes more animated other buyers, who now keep aloof, will begin to place orders. It is pretty well known that most of the foreign markets are almost bare of stocks, and there is every reason for believing that the demand for finished iron will gradually increase as the year goes. Makers confidently expect a large trade with Russia as soon as the shipping season opens, and probably the colonies will be considerable purchasers during the year. Looking forward, therefore, to a better future, makers still adhere to old quotations, although a reduction at the present time would induce many buyers to give out orders who are now keeping them back. The exports of iron continue small, and the only items worthy of notice during the week have been 1800 tons of rail to Bombay and 605 tons to Malacca. There is not much that is fresh to record in regard to the Tin-Plate Trade, but it is satisfactory to find that the tendency, though slow, is towards improvement. Some unexpected disputes have, however, arisen between masters and men. At the Llywelyn Works, near Maesteg, the potters applied for an advance in wages, and as it was not granted immediately a strike ensued. After the works had been at a standstill for a few days, however, matters were arranged, and operations resumed. There appears to be a general movement for an advance in wages.

In regard to the Coal Trade there is little change to be noticed. The demand for steam coals continues brisk, and prices are so far maintained without difficulty. France is still a leading buyer of the coals to be obtained in this district. The tendency in the house coal branch is still downwards, but only slightly, and there continues to be a good business done, and prices, though not firm, are still remunerative. Coke has come down to pretty nearly half the price it was a few months ago.

The extraordinary resolutions come to by some of the colliers employed in the Rhondda Valley last week have not met with favour by the great majority of the colliers. At a meeting held this week an agent of the Union, named Mitchard, addressing the men on various questions, condemned the whole of the clauses which we mentioned last week, and showed the colliers that the sum laid down could not be legally obtained without adopting the apprentice system and signing indentures. The peculiar position of the collier renders this impossible, because he is not really his own master, but is liable at any time to removal and dismissal. So it is not likely that the plan will be adopted.

The West Mostyn Iron and Coal Company (Limited) has been successfully launched by Mr. H. Russell Evans, of London and Newport. During the last nine months, by the starting of this and other companies, Mr. Evans has been the means of raising upwards of 1,000,000/- sterling of capital for the development of iron and coal properties.

The Newport Abercarn Black Vein Steam Coal Company have issued a circular to the shareholders intimating that as they have still sufficient funds in hand for the purpose of sinking and building, they have resolved to postpone the payment of the call due on Feb. 1 until April 1. The whole of the works are progressing in a very satisfactory manner, three shafts being in course of sinking at the company's collieries, one of them being among the largest in the world. Two of the shafts have already reached a depth of 37 yards, and the third 39 yards.

**HONOURABLE CONDUCT OF A MANCHESTER MERCHANT.**—Several manufacturers and merchants in Dundee have just received remittances of a peculiarly gratifying character. We may mention one as an instance. On the 13th instant, Messrs. Shaw, Baxter, and Co. received a note from Mr. ELLIS LEVER, dating from the Midland Coal Office, Piccadilly, Manchester, to the effect—"Kindly favour me with the amount of my indebtedness to you in February, 1868, adding interest at the rate of 5 per cent. per annum, and I will send you a cheque in payment." The statement was forwarded, and by return of post a cheque was received for 1420/- 4s. 4d., Mr. Lever writing that it was a greater satisfaction for him to send than it could be for Messrs. Shaw and Baxter to receive it. The total sum thus paid here and elsewhere is, we understand, about 15,000/- The creditors here having received a composition on Mr. Lever's liabilities in 1868, when he was compelled by unfortunate circumstances to suspend payment, had written off their claims as bad debts. Since that time it appears Mr. Lever has prospered in his transactions, and the manner in which he has now discharged his old obligations with interest is so honourable that it may be hoped it will become exemplary and epidemic.—*Dundee Advertiser.*

#### Registration of New Companies.

The following joint-stock companies have been duly registered:—

**TEESDALE MINING COMPANY (Limited).**—6100 shares of 1/- each. Alfred S. Palmer, of Wardley Colliery, takes 400 shares; George Emerson Forster, contractor, Washington, 400; William Southern, timber merchant, Newcastle-on-Tyne, 300; James Oliver, C.E., Newcastle-on-Tyne, 650; John Haigh Robinson, Newcastle-on-Tyne, architect, 50; Major James Monks, Aden Cottage, Durham, gentleman, 400; J. S. Mitford, C.E., Newcastle-on-Tyne, 100 shares.

**BRITISH TELEGRAPH MANUFACTORY (Limited).**—Capital 30,000/- in 10/- shares. To acquire the business carried on under the name of the British Telegraph Manufactory. The subscribers (who take 10 shares each) are—Charles Wheatstone, Park-crescent, Regent's Park; R. Sabine, 172, Great Portland-street; H. Kimber, 79, Lombard-street; F. Braby, Mount Henley, Sydenham; S. Canning, 7, Great Winchelsea-buildings; T. H. Puleston, 41, Lombard-street; and W. Abbott, 10, Tokehouse-yard.

**CHURCHBRIDGE COLLIERY COMPANY (Limited).**—Capital 30,000/- in 100/- shares. To carry on business as colliery proprietors. The subscribers are—F. P. Broughton, Smethwick; S. Williams, Edgbaston; H. Hawkins, West Smethwick; E. J. Griece, Maudsley, near Newport; Thomas Price, Oldbury; T. A. Kilverstone, Smethwick; Thomas Han, Smethwick.

**GALLOWAY'S PATENT BOILER AND ENGINEERING COMPANY (Limited).**—Capital 100,000/- in 1/- shares. To acquire letters patent in connection with steamengines and boilers, &c. The subscribers are—S. Bullard, 75, Mark-lane, 25; Thomas Douglas, 26, Martin's-lane, 5; W. Moore, Farnham, 50; J. Taylor, 95, Cannon-street, 5; J. Upton, 1, Regent terrace, 25; Thomas Moore, Carter, 8; and J. Gardner, 166, Fleet-street.

**ANTILLES PHOSPHATE AND CHEMICAL COMPANY (Limited).**—Capital 110,000/- in 10/- shares. To carry on business of a phosphate and chemical company. The subscribers (who take 100 shares each) are—Thomas Jamieson, Whalley-range, Manchester; J. M. Spence, Whalley-range; R. Haworth, Manchester; J. W. Dawson, Manchester; R. H. Beaumont, Old Trafford; D. Spence, Whalley-range; R. S. Best, Golo; and J. Richardson, 8, Winchester-street-buildings.

**ANGLO-AUSTRIAN WATER SUPPLY COMPANY (Limited).**—Capital 5000/- in 10/- shares. To obtain concessions for the supply of water to various cities and towns in the Empire of Austria and elsewhere.

**THAMES CHEMICAL COMPANY (Limited).**—Capital 50,000/- in 5/- shares. To carry on the manufacture of dyes and other chemicals. The subscribers (who take one share each) are—J. R. L. Netherby, Ayston, Scotland; J. J. MacKenzie, Wimborne; J. Armitt, Fulham-road; W. T. Godrich, Fulham; T. B. McCree, Pall Mall Club; Thomas Purvis, Eagle Wharf, Hoxton; J. C. Halkett, Crandon, Midlothian.

**NORMANTON IRON AND STEEL COMPANY (Limited).**—Capital 50,000/- in 100/- shares. To acquire the Normanton Ironworks, Yorkshire. The subscribers are—J. B. Favill, Ripon, 50; Thos. Hampton, Sheffield, 50; J. Benson, Leeds, 150; R. Tennant, Leeds, 150; H. F. Favill, Guildford, 50; J. R. Tennant, Keldrock Park, Yorkshire, 5; J. R. Tennant, jun., Leeds, 5.

**TAN-YR-ALLT (Cardiganshire) SILVER-LEAD MINING COMPANY (Limited).**—Capital 5000/- in 100/- shares. For lead mining in Cardiganshire. The subscribers (who take one share each) are—W. Magrath, Murlin, Wilts; N. Gawler, Tower of London; M. Petrie, 14, Hanover-terrace, Lambeth-square; D. De Bembrie, Gifford; S. De Bembrie, 17, Kensington Palace Gardens; G. C. Hansell, Forest Hill; M. Hall, Lawn-terrace, Blackheath.

**UNITED COLLIERIES (Limited).**—For the acquisition of collieries in the Forest of Dean. The subscribers are—W. Hope, Wimbleton, 1; W. W. Hastings, Gainsford-street, N.W., 1; B. T. Norton, Twickenham, 1; J. J. Nicholls, Gravesend, 1; J. R. Kemp, Sydenham, 1; W. W. Ross, Pembridge-gardens, W., 20; H. Brownrigg, Northumberland-terrace, Regent's Park.

**SANITARY MILK COMPANY (Limited).**—Capital 200,000/- in 17/- shares. For the supply of pure milk and cream. The subscribers (who take one share each) are—T. Gamgee, 1, Great Winchester-street; R. Collett, 1, Great Winchester-street; D. Guiliot, 17, Trafalgar-square; R. Purkis, Cheam; Robert Hill, 8, Mary's-terrace, Hornsey-rise; S. Cowper, Coleman-street; and J. R. Hill, Windsor-terrace, City-road.

**RAILWAY CARRIAGE PATENT VENTILATOR COMPANY (Limited).**—Capital 10,000/- in 2/- shares. To acquire patent rights for improvement in the means of ventilating railway carriages.

**WOOD SLAB PAVEMENT COMPANY (Limited).**—Capital 100,000/- in 10/- shares. To acquire patents in connection with wood paving. The subscribers (who take 25 shares each) are—Francis Bennoch, 80, Wood-street, E.C.; A. Langdale, 4, King-street, Cheapside; T. H. Morton, Adelaide-road, St. John's Hill, Windsor-terrace, City-road.

Wood; C. Preston, East India-avenue; Albert Good, 7, Poultry; A. S. Paterson, 1, Monkwell-street; and W. Guer, St. Michael's House.

**MARGATE AQUARIUM COMPANY (Limited).**—Capital 10,000/- in 10/- shares. To construct an aquarium at Margate.

#### THE RIO TINTO MINES.

Some six months since, upon the occasion of the formation of the Rio Tinto Company, we pointed out the superior facilities possessed by them for profitable working as compared with the companies previously in existence; and, although the very energetic opposition which was made to prevent the subscription of capital for establishing a concern which it was felt would be a most powerful rival may have caused some delay in getting the mines and works into full operation, enough has already been done to demonstrate that the most favourable statements that were made as to the capabilities of the mines were fully justified. It will be remembered that the formation of the Rio Tinto Company produced such a panic amongst the executive of the principal rival company that the secretary, in his official capacity, issued a circular to endeavour to prevent the subscription of capital for the Rio Tinto enterprise, yet so encouraging were the prospects—more favourable position of the mineral, greater facilities for shipment, and so on—that the necessary capital was obtained, and the Rio Tinto Company's minerals and metal are already in the market. The work at the mines is making very satisfactory progress, and amongst the recent arrivals at Swansea we can report one from the company's mines, including 120 tons of copper ore, giving a produce of over 5½ per cent. for copper and 47 per cent. for sulphur; nearly 83 tons of precipitate of high percentage, and about 31 tons of cake copper, the whole of which were at once disposed of on favourable terms. But for the delay caused by the rains and the harvest season the first shipment would have been received sooner; considerable quantities will, however, now be regularly sent forward for shipment, and we learn that at the present moment a large quantity of precipitate is at the port awaiting a steamer.

The operations of the company appear to be now attracting the attention of German capitalists, for, in reply to an enquiry recently made through the (German) Consul, E. Kropf, of Cadiz, as to the progress making at the Rio Tinto Mines (the German) Consul Wilhelm Sundheim, of Huelva, writes a letter, of which the subjoined is a translation:—

"The work at those mines, carried on under the superintendence of a thoroughly experienced German engineer, is at its fullest progress. The principal works are confined to a great open cutting, which, in two years (upon opening of the railway to Huelva), will begin to lay bare for immediate extraction, a quantity of 11,000,000 tons of ore; these works are already so far advanced that in January of 1873 will be reached. Further, from the water of the mine copper precipitate is obtained, and upon such a scale that it may be expected that in two years time there will accrue from this source alone a clear profit of from 200,000/- to 300,000. It is probable also that by means of the Buitron Railway in the meantime (until completion of the Rio Tinto line) a quantity of 60,000 to 80,000 tons of ore can be shipped yearly. As regards the condition of things politically, I believe there is nothing whatever to fear on that score. The motives of the local political excesses have, as a rule, a very different origin than appeared at first sight, or, to the politically prejudiced; their origin is generally to be found in gross violations of justice, to the advantage of influential people. In the mountainous part of the province of Huelva there is little agriculture. The whole of the valuable property consists of inexhaustible mines; everyone is appointed to his own hand work, and mines cannot be pifered and robbed, as fields and pastures are. The population is industrious and intelligent; they know well in the Sierra, as at the port, that they owe everything to foreign capitalists, and that Huelva can do nothing but mischievous to itself and to them by political disturbance. During my residence of twelve years here I have witnessed many political revolutions, but never any actual disturbances of this kind in the province; here they howl with the wolves (&c., here one does as the inhabitants do), and let other rope-dancers break their heads as they will. Last August only one of the hottest rope-dancers said to me that if one of them attempted a disturbance in Huelva he would be killed by his own people. An emissary of the Junta of Seville barely escaped such a fate. The province has its reward in thousands of wealthy people of Seville, Cadiz, Cordova, and even Jeya, who seek quiet here for a time, and find it."

A more encouraging statement than this, especially as it comes from a disinterested writer, could scarcely be desired, and it would be difficult to find a more complete answer to the rumours that were set afloat as to the prospects of the enterprise. It must be particularly gratifying to the Rio Tinto shareholders to learn that the political commotion does not interfere with the mining operations, although this is really only confirming what has always been stated by those engaged in the working of mines in Spain and the Spanish-speaking countries of America—the internal wars are mere party fights, in which both combatants are equally careful not unnecessarily to interfere with industry and commerce, because each well knows that in his popularity resides his only hope of retaining power should he be fortunate enough to acquire it.

**UTAH MINES—THE EMMA, FLAGSTAFF, AND TECOMA.**—**SALT LAKE CITY, JAN. 3.**—Another lot of 25 tons of Emma ore was sampled at the Salt Lake City works on Jan. 1, and proved to be one of the richest lots ever taken from the mine. The average sample value of the 25 tons was 1000 ozs. of silver to the ton, and a percentage of lead. The ore was taken from the lower levels of the Emma, and it is understood that it is a specimen of an immense body of the same class recently developed; but of the extent of the new find no one outside the secret association knows. The Emma has shipped but little ore for some time; however, it is reported that shipments will be resumed in a few days.

Colonel M. T. Patrick, superintendent of the Flagstaff, reports that 40 men were set to work yesterday. The paymaster of the company has gone to the Tecoma to settle with the men there who have not been paid for two or three months.

The report from Cottonwood is that there is very little snow in that region, some 3 ft. only, when last year at this time there was from 10 to 15. It will be remembered that it was about a year ago that the heavy snow slide occurred. The wearer at Alta is said to be milder than in this city, and there is but about 1½ ft. of snow in the streets. One of the richest bodies of ore yet reached in the Cottonwoods has been discovered in the Reed and Benson Mine. On the 600-ft. level a strike was made Dec. 30, the ore showing sulphide of lead and carbonate of silver with silica and lime intervening between the chimneys. The ledge between the walls is 70 ft. in width, 4 ft. of it being a solid mass of ore without gangue, or refuse rock, sampling over 1000 ozs. silver per ton. Several specimens from this strike have been brought to the office of the company in Kimball Block. These assay as high as \$3000. We congratulate the fortunate owners of the Reed and Benson, and hope to record like good luck for a few other mines before many months elapse. The Reed and Benson are now shipping 10 tons a-day.

**A COPPER-CLAD SHIP.**—We learn from America that at Jersey they have a very curious vessel, built in Europe, and now in possession of the White Star line, which will shortly be placed in service. The framework is of iron, covered with sheets of thick copper, riveted in the same manner as iron vessels. The whole interior is also made of copper, the inside copper being galvanised, the beams, and, in fact, every exposed part, being completely protected by copper. The masts are of wood, but sheathed in copper from top to stem.

She is a screw steamer, capable of carrying 7000 tons, Custom House measurement, is about 515 feet in length, and has been christened "Adirondack." She will be used for the transportation of corrosive sublimate, vitriol, lumar caustic, potash, sal soda, and similar kinds of freight which are destructive to wooden ships, and even iron-clad vessels. Her outside will be coated with a preparation of fat and copal varnish, to protect her from the effects of the sea water, and it is said that the reflection of the ship upon the ocean on a bright sunny day is like the reflection of the sun at sunset on a large building containing many windows, only on a larger scale. It is claimed that she can be seen at sea on such days a distance of about 17 miles.

**MAN-ENGINES.**—Mr. P. VAN DYK has invented an improvement in man-engines for raising water and lowering and raising men, the object of which is to utilise the man-engine ordinarily employed in lifting the miners as a means of lifting the water of the mine during the time the man-engine is otherwise unemployed. For this purpose to each shaft of the lifts of the man-engine is attached a series of tipping buckets, which alternately with each stroke of the lifts are emptied and filled into each other, thus with every stroke of the one lift lifting all the water in the buckets one stage, and discharging their contents into the other lift when at its lowest point of the stroke, and with each stroke discharging one bucket of water at the day level or ground level of the mine. To suspend the action of the tipping of the buckets whilst the men are being lifted, the man-engine is constructed with a variable stroke, that is, whatever stroke is used for lifting water a portion of it will be required for the action of tipping the buckets; when the men are to be lifted the stroke is reduced by that portion, the remainder being equal to the distance apart of the landing stage for the men.

**LEAD ORES.**—Mr. P. E. DE WISSOCQ, has invented an improved process of treating lead ores, according to which lead ores are treated with hydrochloric acid. The chloride of lead is dissolved out with boiling water, and the lead is precipitated by means of iron; it is collected and melted into pigs. The residue is treated with brine to extract silver, which is then precipitated with copper. The sulphurated hydrogen produced in the first operation is collected and utilised.

**Issue of Preference Shares.**—Entitled to a preferential dividend of 10 per cent. per annum, over the ordinary shares of the company, and a *pro rata* proportion of profits after a similar dividend has been paid on the ordinary shares.

**THE BALLACORKISH MINING COMPANY (LIMITED).**

Incorporated with Limited Liability, under the Companies Acts, 1862 and 1867, limiting the liability of shareholders to the amount of their shares.

**Issue of 1500 Preference Shares of £5 each.**—Entitled to a preferential dividend of 10 per cent. per annum over the ordinary shares of the company, and a *pro rata* proportion of profits, after a similar dividend has been paid on the ordinary shares.

**Payment.**—10s. per share on application, and 10s. on allotment, making £1 called up. The remainder of the capital will only be called, if required; and no call will exceed 10s. per share, nor be made at intervals of less than three months.

If no allotment is made the deposits will be returned in full.

**DIRECTORS.**

PARKE PITTAR, Esq., Chairman, 8, Redcliffe-street, Brompton. HENRY BURKINBURYOUNG, Esq., 85, Cornwall-gardens, South Kensington.

F. J. KING, Esq., Surbiton Hill, and Douglas, Isle of Man.

WILLIAM OGILVIE, Esq., Angel-court, Throgmorton-street.

C. J. PITTA, Esq., Ballashollogue House, Rushen, Isle of Man.

AUDITORS—Messrs. BROWN and SON.

MANAGER—JOHN DARLINGTON, Esq.

BANKERS—LONDON AND WESTMINSTER BANK.

MANAGER AT THE MINE—Capt.

IN THE MATTER OF THE COMPANIES ACTS, 1862 AND 1867,  
AND  
IN THE MATTER OF THE TREVISCOE IRON COMPANY (LIMITED),  
IN LIQUIDATION.

**T**HE LIQUIDATOR is PREPARED to RECEIVE TENDERS for the PURCHASE of the TREVISCOE IRON MINE, situated in the parish of St. Stephen's, about six miles from St. Austell, Cornwall, and within two and a half miles of the Bodennich and High-street sidings of the Cornwall Railway.

Forms of tender and particulars to be had on application to the Liquidator, Mr. JAMES WADDELL, Mansion House Chambers, 12, Queen Victoria-street, London; or the Solicitors, Messrs. TATHAM and SON, 17, Old Broad-street, E.C.

## IN THE MATTER OF THE HAMMETT MINE COMPANY.

**N**OTICE.—By RESOLUTION passed at the SPECIAL GENERAL MEETING, HELD on the 31st December, 1873, and confirmed by Special Meeting held on January 21st, 1874, the HAMMETT MINE was ORDERED to be WOUND-UP voluntarily, and I, the undersigned EMANUEL BEAZLEY, of 9d, New Broad-street, in the City of London, was appointed Liquidator.

All debts due to the estate must be paid to me.

Creditors having claims must forward full particulars on or before the 1st of March next, or they will be excluded from participating in the assets of the estate.

EMANUEL BEAZLEY, Liquidator.

LUMLEY and LUMLEY, Solicitors, 15, Old Jewry Chambers, in the City of London.

## IN THE MATTER OF THE COMPANIES ACTS, 1862 AND 1867;

AND OF THE

## EAST FOXDALE SILVER-LEAD MINING COMPANY (LIMITED).

**N**OTICE IS HEREBY GIVEN, that ALL CREDITORS and OTHER PERSONS having any DEBT, CLAIM, or DEMAND against the above-named company are hereby required TO SEND in THE PARTICULARS of all such DEBTS, CLAIMS, and DEMANDS to RICHARD MITCHELL, of No. 4, Abchurch Chambers, Abchurch-yard, in the City of London, and HENRY JAMES WENHAM, of No. 42, Finsbury Circus, in the City of London, the Liquidators of the said company, at the office of the said company, 4, Abchurch Chambers, Abchurch-yard, in the City of London, on or before the 14th day of February, 1874; and, in default thereof, they will be EXCLUDED from the BENEFITS of the REVERSION made before such DEBTS, CLAIMS, and DEMANDS are PROVED.

SOUTHGATE AND WATSON, 7, King's Bench Walk, Temple London. (Solicitors for the Liquidators.)

Dated the 24th day of January, 1874.

## THE RICHMOND CONSOLIDATED MINING COMPANY (LIMITED).

Notice is hereby given, that an EXTRAORDINARY GENERAL MEETING of the shareholders will be HELD on TUESDAY, the 27th instant, at One o'clock at the Terminus Hotel, Cannon-street, London, for the purpose of meeting the company's Representatives who have just returned from the Mine.

By order of the Board,

THOS. WESTBURY HALL, Secretary.

61, Moorgate-street, London, E.C., 20th January, 1873.

## THE BELSTON MINING COMPANY (LIMITED).

Notice is hereby given, that the ORDINARY HALF-YEARLY GENERAL MEETING of the shareholders will be HELD at the offices of the company, No. 2, Royal Exchange Buildings, in the City of London, on FRIDAY, the 30th day of January instant, at Twelve o'clock noon, precisely, to receive and consider the report of the directors, and the audited accounts and balance-sheet of the company, for the past year.

Notice is hereby further given, that an EXTRAORDINARY GENERAL MEETING of the shareholders will be HELD at the offices of the company, on FRIDAY, the 30th day of January instant, immediately after the business of the ordinary general meeting has been transacted, for the purpose of considering the desirability of increasing the capital of the company, and of passing the necessary special resolutions for carrying the determination of the meeting into effect.

The Transfer-Books of the company will be closed from the 17th to the 30th day of January instant, both days inclusive.

By order of the Board,

FRAS. R. REEVES, Secretary.

2, Royal Exchange-buildings, London, 17th January, 1874.

## THE PORT PHILLIP AND COLONIAL GOLD MINING COMPANY (LIMITED).

Incorporated by Royal Charter, and under the Companies Acts of 1862 and 1867.

Notice is hereby given, that the ORDINARY GENERAL MEETING of the shareholders of this company will be HELD at the Cannon-street Terminus Hotel, Cannon-street, in the City of London, on THURSDAY, the 29th day of January, 1874, at One o'clock precisely, in pursuance of the deed of settlement, to receive the directors' report and the accounts, re-elect retiring officers, and to transact such other business as may be necessary.

By order,

J. W. PURCHASE, Secretary.

Offices, 30, Moorgate-street, London, E.C., 12th January, 1874.

N.B.—The Transfer Books of the Company will be closed from Wednesday, the 28th January, 1874, until Thursday, the 12th February next, both days inclusive.

## VICTORIA (LONDON) MINING COMPANY (LIMITED).

Notice is hereby given, that the ORDINARY GENERAL MEETING of the shareholders of this company will be HELD at the Cannon-street Terminus Hotel, Cannon-street, in the City of London, on THURSDAY, the 29th day of January, 1874, at Two o'clock in the afternoon precisely, for the following purposes:—

To receive and consider a report of the proceedings of the company, and a statement of the accounts since the last Ordinary General Meeting.

To elect directors in the place of R. H. Bland, Esq., and E. Westby, Esq., who retire by rotation, and offer themselves for re-election.

To elect auditors for the ensuing year.

By Order,

J. W. PURCHASE, Secretary.

Offices: 30, Moorgate-street, E.C., 12th January, 1874.

N.B.—The Transfer Books of the company will be closed from Wednesday, the 28th January, 1874, until Thursday, the 12th February next, both days inclusive.

## TO GAS COMPANIES, COAL MERCHANTS, AND OTHERS.

## SMALL SILKSTONE COLLIERY FOR SALE (100 to 150 tons per day), working the BLACK SHALE or SILKSTONE SEAM. Situate near a main line of railway.

Apply to Messrs. CORBETT and WOOD, 31, High-street, Sheffield.

## STEAM ENGINES AND STAMPS FOR SALE.

ONE 50 in. cylinder PUMPING ENGINE, 9 ft. stroke, equal beam, with ONE BOILER, crab winch, and first piece of main rod.

ONE cast iron BALANCE BOB, with hanging rod.

ONE 24 in. cylinder WINDING ENGINE, 8 ft. stroke, with iron drawing cage, and ONE BOILER, complete.

36 heads of STAMPS, with stands, frames, hoppers, &c.

Apply to Wm. LANGDON, Northumberland Foundry, Launceston, Cornwall.

## RAILS (IRON) FOR SALE.

NEW PERFECT FLANGE RAILS, 40, 60, 72, 74, and 75½ lbs.

and 74 lbs. per yard.

For particulars and prices apply to W. G. FOSSICK, 6, Laurence Pountney-hill, London.

## RAILS FOR SALE, in great variety of sections (perfect, slightly defective, and second-hand), 14 to 82 lbs. per yard. Also CHAIRS and the other NECESSARY FITTINGS.

Apply to BREYEN, RICHARDSON, and Co., Newcastle-on-Tyne.

## ON SALE,—MASSIVE CRUSHING MILL, with two pairs of 24-in. rolls, in cast metal frames.

Also 250 yards of 1½ in. diameter IRON WIRE WINDING ROPE.

Address, "X. Y. Z.," MINING JOURNAL Office, 26, Fleet-street, London.

## FOR SALE, THE BRITISH PATENT FOR DUBOIS'S LOWERING APPARATUS. Applicable to SIDE-HILL MINES, QUARRIES, &amp;c.; also LARGE WAREHOUSES.

Communications addressed to Mr. Wm. HUTCHINSON, Broomhall Park, Sheffield, will receive prompt attention.

## MESSRS. CAMERON AND CO., FINANCIAL AGENTS AND SHARE BROKERS, BRIDGE STREET CHAMBERS, CHESTER.

## MESSRS. S. R. COCKS AND CO., MINING ENGINEERS, &amp;c.

ROCHE, ST. AUSTELL.

COPPER MINE GRANT OR SETT FOR SALE.

TIN MINE

SLATE QUARRY

CHINA CLAY

IRON MINES

Also, 24 heads of STAMPS, iron axles, four came to the round, and dressing appliances.

Prices and particulars on application.

Mines inspected, and confidential reports and surveys made.

M. R. T. L. COTTINGHAM OFFERS TO CAPITALISTS:—

ONE SILVER-LEAD SETT, proved very rich.

ONE LEAD ditto.

ONE IRON ditto.

And a PROPRIETOR'S INTEREST in a RICH GOLD SETT.

FOR SALE—A CAPITAL PERCUSSION TABLE, in first rate condition.

Mold, Dec. 22, 1873.

## MESSRS. R. SYMONS AND CO., LAND AND MINE SURVEYORS, AND LITHOGRAPHERS, 11, PARADE, TRURO.

Plans of every description prepared from actual survey, or from drafts furnished.

Plans, sections, prospectuses, &c., lithographed in any quantity.

The condition of any mine truly described upon request.—Truro, Jan. 14, 1874.

M. R. J. S. M. E. R. R. Y., ASSEAYER AND ANALYTICAL CHEMIST SWANSEA.

## In the Court of the Vice-Warden of the Stannaries. Stannaries of Cornwall.

**I**N the MATTER of the COMPANIES ACT, 1862, and of the EAST PROVIDENCE MINING COMPANY.—By direction of His Honor the Vice-Warden, notice is hereby given that, on Thursday, the 5th day of February next, at the Registrar's Office, at Truro, Cornwall, at Eleven o'clock in the forenoon, this Court will PROCEED to MAKE a CALL of SIXTEEN SHILLINGS AND SIXPENCE PER SHARE on all the contributors of the said company settled on the List of Contributors as present members thereof.

All persons interested therein are entitled to attend at the time and place aforesaid to offer objections to such call. FREDERICK MARSHALL, Registrar. Dated Registrar's Office, Truro, January 21st, 1874.

## UPTON IRON MINES, BRIXTON, DEVON. TO SPECULATORS, AND OTHERS.

**M**R. J. ADAMS WILL SELL, BY AUCTION, at the Bolton Hotel, in Brixton, on Tuesday, the 27th of January, 1874, on such conditions as shall then be produced, the very valuable ROYALTY DUES, with the RIGHT and LIBERTY of MINING on the UPTON ESTATE, for the unexpired part of a term of 21 years, from the 25th of December, 1867, granted by a Lease, dated April 3rd, 1868, which will be produced at the auction.

By the above lease liberty is granted to the lessee to mine and RAISE IRON OR LEAD MINES, or upwards of 170 acres of the above estate. The royalty dues are £1, 3d. per 21 cwt., and these mines have been very successfully worked for about 30 years, and contain an inexhaustible amount of iron of the best quality, which is found near the surface, and water on the property can be used for washing, if desired. The estate is situate adjoining the sea, where water-carriage can be made available; it is also within about one mile from the Brixton Quay, where the ore is usually shipped, and the lessee's interest in the above has lately been sold for a very considerable sum—therefore this offers an opportunity to persons rarely to be met with.

For viewing, apply to PETER VINCENT, at Lock's Cottage, near the Estate, Tuesdays and Fridays; and for further particulars to Mr. J. ADAMS, Surveyor, Newton Abbot, at whose offices the lease and plan of the estate can be seen on any Wednesday before the sale. Sale to commence at Three P.M.

N.B.—FOR SALE, BY PRIVATE CONTRACT, about SIXTY DOZEN of PRIME CLARET, direct from Bordeaux.—Apply to Mr. ADAMS, as aforesaid. General Surveying Offices, Newton Abbot, Devon, January 6th, 1874.

## SPARE MATERIALS AT WEST WHEAL JEWELL.

**J**OHN THOMAS AND W. T. DAVEY have been favoured with instructions TO SELL, AT PUBLIC AUCTION, on Monday, February 2nd, at Twelve for One o'clock precisely, at the Account-house of the West Wheal Mine, between St. Day and Redruth, the following very VALUABLE SPARE

## MACHINERY AND MATERIALS, viz.:—

ONE 54 in. cylinder PUMPING ENGINE, 9 ft. stroke, equal beam.

ONE 11 ton BOILER (nearly new); ONE 11 ton BOILER.

ONE STEAM STAMPING MACHINE and MULTITUBULAR BOILER.

ONE 60 ft. SHEARS, with sheaves, &c., complete.

200 fms. 12 in. capstan rope, nearly new.

1 new balance bob, complete.

12 limbed fend-off bob, with bishops' heads and strappings, complete.

50 14 in. 9 ft. pumps.

3 13 in. ditto

22 12 in. ditto

3 13 in. matchings.

1 12 in. sinking windbore.

1 12 in. doorpiece.

1 12 in. working.

1 12½ in. flat bottom windbore.

1 12½ in. doorpiece.

1 12½ in. flat bottom windbore.

2 12½ in. in. plunger poles, stuffing boxes, &c.

1 12 in. ditto ditto

1 12 in

**LOCOMOTIVE TANK ENGINES**  
FOR MAIN LINE TRAFFIC, SHORT LINES, COLLIERIES, CONTRACTORS, IRONWORKS, MANUFACTORIES, &c., from a superior specification, equal to their first-class Railway Engines, and specially adapted to sharp curves and heavy gradients, may always be had at a short notice from—  
MESSRS. BLACK, HAWTHORN, AND CO., LOCOMOTIVE, MARINE, AND STATIONARY ENGINE WORKS, GATESHEAD-ON-TYNE.

## MINES REGULATION ACT

## STEMMERS, PRICKERS, CHARGERS, AND SCRAPERS,

Which have been tried and found to answer the purpose, are

MANUFACTURED BY  
JAMES WHITFIELD,  
OXFORD STREET, BIRMINGHAM.DIAMOND FUEL COMPANY  
(LIMITED),  
FOR PRODUCING SOLID FUEL FROM COAL OR COKE DUST.

THIS COMPANY are now GRANTING LICENSES for the USE of their PATENT in the UNITED KINGDOM.

By being able to dispense with the costly processes employed in the manufacture of existing patent fuels, and producing an article free from their defects, this company believe their fuel, when generally known, must supersede all other patent fuels.

By its employment the owners of Anthracite Collieries may utilise the small, which has been hitherto wasted.

The proprietors of Gas Works may by its use bind together and use over again their coke breeze.

Application to be made to the SECRETARY, at the office of the company,—

23, OLD BROAD STREET, CITY, E.C.

## THE PATENT SELF-ACTING MINERAL DRESSING MACHINE COMPANY (LIMITED).

T. CURRIE GREGORY, C.E., F.G.S.  
OFFICES, —62, ST. VINCENT STREET, GLASGOW.

## IMPORTANT NOTICE TO MINE PROPRIETORS.

This company grant licenses, under their patents, for the use, singly or in combination, of the most approved machinery for dressing ores, comprising Stamps, Jiggers, Classifiers, and Boulders.

MR. GEORGE GREEN, Mechanical Engineer to the above Company, SUPPLIES MACHINES under the above Company's Patents for DRESSING all METALLIC ORES. Dressing floors having these Machines possess the following advantages:—

1.—They are cheaper than any other kind in first outlay.  
2.—From 60 to 70 per cent. of the labour is saved.

3.—Only about one-fourth of the space usually occupied by dressing-floors is required.

4.—The ore is made clean at one operation, and 5 per cent. of ores otherwise lost is saved.

Drawings, specifications, and estimates will be forwarded on application to—

GEORGE GREEN, M.E., ABERYSTWITH, SOUTH WALES.

## EXTRACTS FROM TESTIMONIALS RECEIVED:—

Mr. C. E. BAINBRIDGE, of the London Company's Mines, Middleton-in-Teesdale, by Darlington, writing on the 27th September, 1873, says—"After a full season's experience of the very complete Dressing Machine erected by you at our Colberry Mines, we are fully satisfied with our decision to adopt your patents in preference to all others. The machinery does its work as well as we can desire, and better than we anticipated. We are now getting through 70 tons of orestuff per day, of rich quality. Without your machinery we should have been at a standstill, for we cannot get hands to supply our wants elsewhere. It saves fully one-half of the old wages, and vastly more on the wages we now give, and the saving in ore is not much short of 10 per cent. You can quote from this letter as you think proper."

Mr. COULTAS DODSWORTH, of Haydon Bridge, writes, on the 15th January, 1874:—"I have just returned from the Stoncroft and Greyside Mines, where I have seen your 'Patent Ore Dressing Machinery' at work, with which, I must say, I was highly pleased. It is decidedly the best machinery I have ever seen for the purpose, the results being as near perfection as possible, and I am quite sure its use in this case will be a very great saving to the company. No large mining establishment should be without your machinery, especially when labour is difficult to procure—a mere fraction of the hands being only required as against the old system, and the work altogether much better done, and a great saving of ore effected. I have heard it said that your machinery is better adapted for poor than for rich ores, but from what I have seen to day I am quite confident it will do for any kind of ores. I beg not only to congratulate, but also to compliment, you on the great success of your 'Patent Ore Dressing Machinery.' You may use this letter as you think proper."

Mr. MONTAGUE BEALE, Managing Director of the Cagliari Mining Company (Limited), says, on May 15th, 1873:—"I have much pleasure in speaking of the great efficiency of your 'Patent Dressing Machinery,' as erected by you at our mines at Rosas, in the Island of Sardinia. You will remember it has always been considered impossible to dress, or rather separate, the minerals our ores contain by machinery, but our captain assures me he gets a constant return of 76 per cent. of lead with the greatest ease, and I know by the returns we are realising the best market price. I consider this company is much indebted to you for the success you have achieved at so small cost. It may interest you to know, from my experience in several of the British possessions, including the whole of the Australian Colonies, that my opinion is I have never seen any dressing machinery that can efficiently, and at so small a cost, dress, and separate metallic ores, however close the mechanical mixture may be, as yours. You can use this letter in any way you like."

The most satisfactory testimonials also have been received from the GREENSIDE MINE COMPANY, Westmoreland; the TALARGOCH MINING COMPANY, North Wales, and others. Copies of these may be had from Mr. GREEN.

PROFESSOR TENNANT'S LECTURES on ROCKS and METALLIC MINERS, at King's College, are given on Wednesday and Friday mornings from Nine to Ten o'clock, and on Thursday evenings from Eight to Nine. The lectures commence Thursday, 22nd, and will be continued to Easter. PRIVATE INSTRUCTION in GEOLOGY and MINERALOGY can be had of Prof. TENNANT, at his residence, 149, Strand, W.C., by those unable to attend public lectures.

GREENER AND ELLIS' IMPROVED FETTLING FOR PUDDLING FURNACES is now in active operation at the SKERNE IRONWORKS, DARLINGTON, and LICENSES may be had for USING the PATENT on application to T. GREENER, STATION STREET, DARLINGTON. The improved yield and quality of iron produced, and the economy effected by the process, render its speedy universal adoption, in these times, a matter of necessity and certainty.—Darlington, January, 1874.

MESSRS. GROSVENOR AND CO., SHAREBROKERS, 58, PORTLAND STREET, MANCHESTER, beg to inform their clients and the public in general that they have for sale a few shares in each of several most promising Progressive Mines, which they fearlessly assert will shortly return to investors enormous profits on a small outlay and at a nominal risk.

CAPTAIN ABSALOM FRANCIS, GOGINAN, ABERYSTWITH, MINING AGENT, ENGINEER, AND SURVEYOR. The great success which is attending the opening and working of the Mines in the counties of Cardigan and Montgomery, and the many properties placed at the disposal of Capt. ABSALOM FRANCIS, induce him to offer his services either to ADVISE, INSPECT, REPORT, or SURVEY, for Mining Companies or private shareholders.

For terms, apply to Capt. ABSALOM FRANCIS, as above.

M. R. CHARLES F. COLLOM, MINING ENGINEER, INSPECTOR OF MINES, &amp;c. TAVISTOCK.

MANAGEMENT OF THE SOUTH DEVON FIRE-CLAY COMPANY. Patents of COLLUM'S PATENT REVOLVING FRAME for DRESSING TIN, AMALGAMATING GOLD, &amp;c.

INVESTMENTS IN MINES ARRANGED FOR CAPITALISTS.

TREDINICK AND CO., CONSULTING MINING ENGINEERS. MINES PAY WELL, yet require judgment in the selection. Statistical data and reliable intelligence gratuitously rendered. Apply, Twelve to Three o'clock personally, or by letter. DEALERS IN APPROVED STOCKS AND SHARES. 32 Fleet-street, St. Dunstan's, London, E.C.

THE IRON AND COAL TRADES' REVIEW: ROYAL EXCHANGE, MIDDLESBOROUGH. The IRON AND COAL TRADES' REVIEW is extensively circulated amongst the Iron Producers, Manufacturers, and Consumers, Coalowners, &amp;c., in all the iron and coal districts. It is, therefore, one of the leading organs for advertising every description of Iron Manufactures, Machinery, New Inventions, and all matters relating to the Iron, Coal, Hardware, Engineering, and Metal Trades in general.

Offices of the Review: Middlesborough-on-Tees (Royal Exchange); London 11 and 12, Red Lion-court, Fleet-street; Newcastle-on-Tyne (50, Grey-street).

WHEN A PERSON TAKES COLD safe and immediate relief may be obtained by the use of SPENCER'S PULMONIC ELIXIR. The best remedy for asthma and disorders of the chest and lungs. In bottles at 1s. 1½d. and 2s. 9d. each. Sold by all chemists.

## THE MINING JOURNAL

## SAVING LIFE IN MINES—DENAYROUZE PATENTS.

Gold Medal Exhibition of Paris, 1867. Gold Medal (First Prize of Merit) Exhibition of Vienna, 1873.

## THE AÉROPHORE,

## MINING APPARATUS FOR WORKING IN DELETERIOUS GASES.

R. APPLEGARTH,

63, Queen-street, Cannon-street, London, E.C.; and at 3, Boulevard Voltaire, Paris.

DESCRIPTIVE CATALOGUES SENT ON APPLICATION.

## ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

## CARDIFF MEETING, 1872.

## CLAYTON AND SHUTTLEWORTH

Have much pleasure in announcing the following List of Prizes awarded them at this Show:—

"For the Best Portable Steam Engine" .....	THE FIRST PRIZE OF £40.
"For the Best Combined Portable Thrashing Machine" .....	THE FIRST PRIZE OF £40.
"For the Best Combined Portable Thrashing and Finishing Machine" .....	HIGH COMMENDATION.
"For the Best Straw and Hay Elevator (Stacking Machine)" .....	THE FIRST PRIZE OF £10.
"For the Best Straw Elevator" .....	THE PRIZE OF £5.

CLAYTON AND SHUTTLEWORTH have received FIRST PRIZES at every TRIAL of the ROYAL AGRICULTURAL SOCIETY at which they have competed since 1849; and on three occasions in succession—namely, at Bury St. Edmunds, in 1867; at Oxford, in 1870; and at Cardiff, as above, they have been awarded all the First Prizes offered for Steam Engines.

## VIENNA UNIVERSAL EXHIBITION, 1873.

THE SPECIAL DIPLOMA OF HONOUR for Agricultural Machinery.

Also TWO MEDALS FOR PROGRESS, GROUP XIII.—Portable and Traction Engines.

## MOSCOW GREAT EXHIBITION, 1872.—Two Gold Medals.

Revised catalogues free, by post, on application to

## CLAYTON AND SHUTTLEWORTH, LINCOLN.

78, LOMBARD STREET, LONDON, AND 35 AND 37, TARLETON STREET, LIVERPOOL.

## J. WOOD ASTON AND CO., STOURBRIDGE

(WORKS AND OFFICES ADJOINING CRADLEY STATION),

Manufacturers of

## CRANE, INCLINE, AND PIT CHAINS,

Also CHAIN CABLES, ANCHORS, and RIGGING CHAINS, IRON and STEEL SHOVELS, SPADES and FORKS, ANVILS, VICES, SCYTHES, HAY and CHAFF KNIVES, PICKS, HAMMERS, NAILS,

RAILWAY and MINING TOOLS, FRYING PANS, BOWLS, LADLES, &amp;c., &amp;c.

Crab Winches, Pulley and Snatch Blocks, Screw and Lifting Jacks, Ship Knees, Forgings, and Use Iron of all descriptions, STOURBRIDGE FIRE BRICKS AND CLAY.

## MINING MACHINERY AND TOOLS.

## THE TUCKINGMILL FOUNDRY COMPANY,

85, GRACECHURCH STREET, LONDON, E.C. WORKS: TUCKINGMILL.

## MANUFACTURERS of every description of MINING MACHINERY, TOOLS, MILLWORK, PUMPING, WINDING, &amp; STAMPING ENGINES.

SOLE MAKERS OF

## BORLASES PATENT ORE-DRESSING MACHINES AND PULVERISERS.

PRICE LISTS CAN BE HAD ON APPLICATION, AND

SPECIAL QUOTATIONS WILL BE GIVEN UPON INDENTS AND SPECIFICATIONS.

## TUCKINGMILL FOUNDRY AND ROSEWORTHY HAMMER MILLS

TUCKINGMILL, CORNWALL, AND 85, GRACECHURCH STREET, LONDON, E.C.

## THE "CRANSTON" ROCK DRILL.

J. G. CRANSTON begs to announce that he is now prepared to supply the above machine, for which he has recently secured Letters Patent.

The "CRANSTON" ROCK DRILL is already in successful operation in several Mines in the North of England.

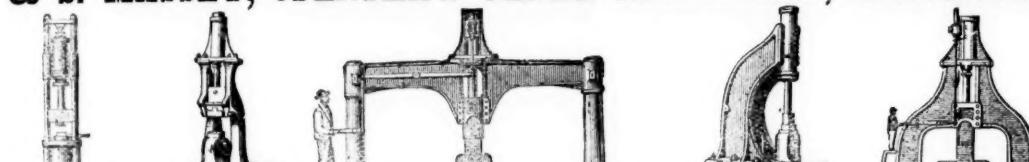
STEAM BOILERS, AIR COMPRESSORS, and all other MINING MACHINERY supplied.

For prices, estimates, and other particulars, apply to—

J. G. CRANSTON, ENGINEER, 22, GREY STREET,  
NEWCASTLE-ON-TYNE.

PRIZE MEDALS—PARIS, 1867; HAVRE, 1868; HIGHLAND SOCIETY, 1870.

## B. &amp; S. MASSEY, OPENSHAW CANAL IRONWORKS, MANCHESTER.



PATENTEE AND MAKERS OF DOUBLE AND SINGLE-ACTING STEAM HAMMERS of all sizes, from 17 lbs. to 20 tons, with Self-acting or Hand Motions, in either case giving a perfectly DEAD-BLOW, while the former may be worked by hand when desired. Large Hammers, with Improved Framing, in Cast or Wrought Iron. Small Hammers working up to 500 blows per minute, in some cases being worked by the foot of the smith, and not requiring any separate driver.

SPECIAL STEAM STAMPS, of great importance for Smith Work, Bolt-making, Punching, Bending, &amp;c. Hammers for Engineers, Machinists, Ship-builders, Steel Tillers, Millwrights, Copper-smiths, Railway Carriage and Wagon Builders, Colliery Proprietors, Ship Smiths, Bolt Makers, Cutters, File Makers, Spindle and Flyer Makers, Spade Makers, Locomotive and other Wheel Makers, &amp;c.; also for use in Repairing Smithies of Mills and Works of all kinds, for Straightening Bars, Bending Cranks, Breaking Pig-iron, &amp;c.

STEAM HAMMERS AND STEAM STAMPS MAY ALWAYS BE SEEN AT WORK.

CHAS. PRICE AND CO.'S RANGOON ENGINE OIL,  
AS SUPPLIED TO H.M. DOCKYARDS AND FLEET.

THIS OIL is suitable to every kind of Machinery. As a lubricant it is equal to the best Sperm or Lard Oil, while it possesses the great advantage of being entirely free from any principle which will corrode the metal bearings.

For adapted to the nature of the work to be done.

"Chemical Laboratory, 7, Printing House-square, Blackfriars, April, 1869.

"I herewith certify that the Rangoon Engine Oil, manufactured by Messrs. Chas. Price and Co., is free from any material which can produce corrosion of the metal work of machinery. It is indeed calculated to protect metallic surfaces from oxidation.

"The lubricating power of this oil is equal to Sperm or Lard Oil.

"T. W. KEATES, F.C.S., &amp;c., &amp;c.

Every parcel of the Oil sent from the work bears the Trade Mark of the Firm.

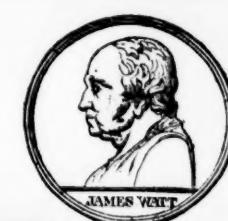
LONDON: CASTLE BAYNARD, UPPER THAMES STREET.

WORKS: MILLWALL, POPLAR; and ERITH, KENT.



# T. A. WARRINGTON.

CO-PATENTEE OF "THE POWER-JUMPER."  
SOLE AND EXCLUSIVE AGENT FOR  
**THE "KAINOTOMON" ROCK DRILL,**  
FOR SIMPLICITY, ECONOMY, AND EFFICIENCY UNEQUALLED; AND  
**ANDRE'S PATENT HYDRAULIC MINING PUMP,**

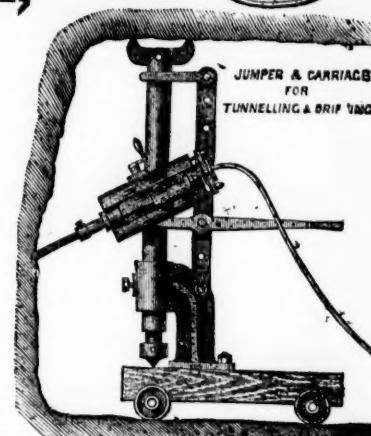


Both these Machines were awarded the FIRST-CLASS MEDAL at the Royal Cornwall Society's Exhibition, 1873.

ENGINEER. AND CONTRACTOR FOR  
MINING MACHINERY OF EVERY DESCRIPTION.

Rock Drills, Coal Cutters, Air Compressors, Winding and Pumping Machinery, Steam  
Boilers, Stone Breakers, Quartz Crushers, Stamps, &c.

30, KING STREET, CHEAPSIDE, LONDON, E.C.



**BARROWS & STEWART,**  
ENGINEERS, BANBURY,

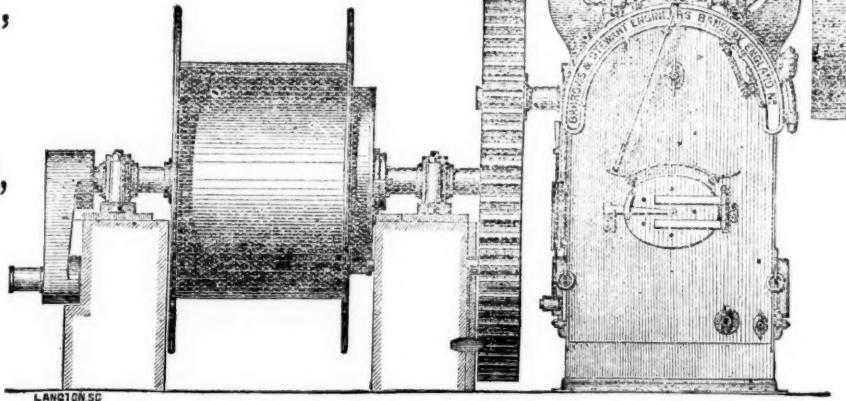
MANUFACTURE

**PORTABLE STEAM ENGINES**

With Gear for Winding, Pumping, and Ore  
Crushing.

Also, **COMBINED MILLS** and **ENGINES**, with  
or without

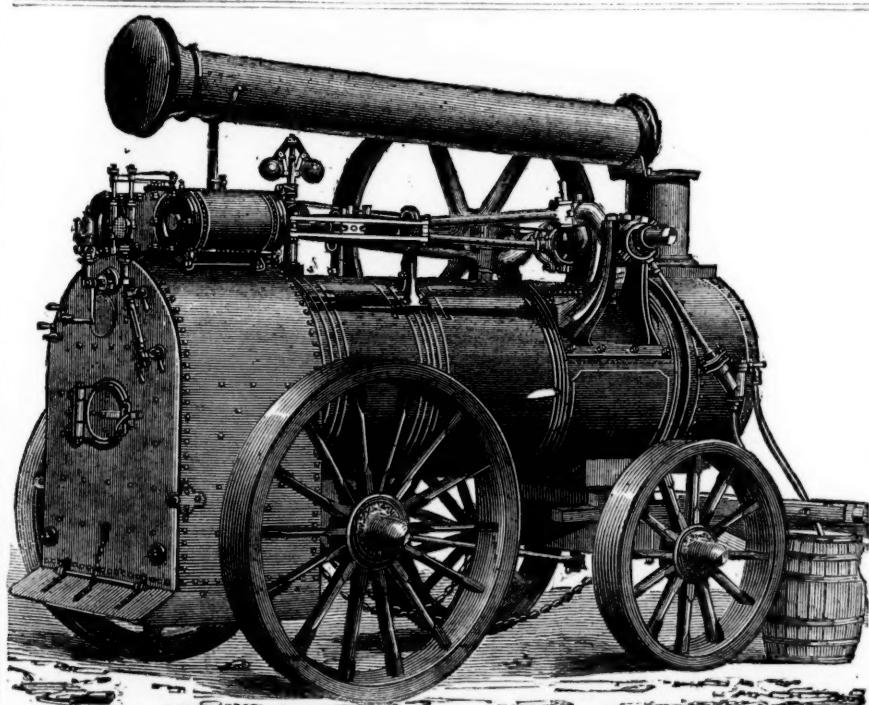
**BOILERS**,  
for Grinding  
Cinders, Sand,  
Mortar, &c.



LANGTON, SC

**PORTABLE,  
SEMI-PORTABLE,  
AND  
FIXED  
ENGINES.**

**VERTICAL  
ENGINES,  
MORTAR MILLS,  
AND  
CIRCULAR  
SAW BENCHES.**



**WINDING AND PUMPING GEAR.**

For catalogues and particulars, apply to—

**S. LEWIN, POOLE, DORSET.**

**RAILWAY CARRIAGE COMPANY (LIMITED).**—  
ESTABLISHED 1847.  
OLDBURY WORKS, NEAR BIRMINGHAM.  
MANUFACTURERS OF RAILWAY CARRIAGES AND WAGONS, and EVERY  
DESCRIPTION OF IRONWORK.  
Passenger carriages and wagons built, either for cash or for payment,  
over a period of years.  
RAILWAY WAGONS FOR HIRE.  
CHIEF OFFICES,—OLDBURY WORKS, NEAR BIRMINGHAM.  
LONDON OFFICES,—7, GREAT WINCHESTER STREET BUILDINGS.

**THE BIRMINGHAM WAGON COMPANY (LIMITED)**  
MANUFACTURE RAILWAY WAGONS OF EVERY DESCRIPTION, for  
HIRE AND SALE, by immediate or deferred payments. They have also wagons  
for hire capable of carrying 6, 8, and 10 tons, part of which are constructed speci-  
ally for shipping purposes. Wagons in working order maintained by contract.  
EDMUND FOWLER, Sec.

WAGON WORKS,—SMETHWICK, BIRMINGHAM.  
\*\* Loans received on Debenture; particulars on application.

**WATTS, RICHARDS, AND CO.,**  
PITWOOD MERCHANTS,  
PENNER WHARF, NEWPORT, MONMOUTHSHIRE.  
AGENTS AT SWANSEA:—  
STEPHEN AND REES, SAW MILLS, GREENFIELD STREET.  
Importers of every description of wood for colliery purposes.

**OSLER'S CRYSTAL GLASS CHANDELIERS.**  
TABLE GLASS OF ALL KINDS.  
CHANDELIERS IN BRONZE AND ORMOLU.  
Moderate Lamps and Lamps for India.  
LONDON..... SHOW ROOMS, 45, OXFORD STREET, W.  
BIRMINGHAM..... MANUFACTORY AND SHOW ROOMS, BROAD STREET  
(ESTABLISHED 1807.)

**M**ESSRS. WATSON BROTHERS return their most sincere  
thanks for the great patronage bestowed and confidence reposed in their  
firm for upwards of 30 years, and to assure their friends and clients it will be  
their earnest endeavour to merit a continuance of both.

In the year 1843, when Cornish mining was almost unknown to the general  
public, attention was first called to its advantages, when properly conducted, in  
the "Compendium of British Mining," commenced in 1837, and published in 1843,  
by Mr. J. Y. WATSON, F.G.S., author of "Gleanings among Mines and Miners,"  
"Records of Ancient Mining," "Cornish Notes" (first series, 1862), "Cernish  
Notes" (second series, 1863), "The Progress of Mining," with Statistics of the  
Mining Interest, annually for 21 years, &c., &c. In the Compendium, published  
in 1843, Mr. WATSON was the first to recommend the system of a "division of  
small risks in several mines, ensuring the success in the aggregate," and **Messrs.**  
WATSON BROTHERS have always a selected list on hand. Perhaps at no former  
period in the annals of mining has there been more peculiar need of honest and  
experienced advice in regard to mines and sharedealing than there is at present;  
and, from the lengthened experience of **Messrs. WATSON BROTHERS**, they are  
emboldened to offer, thus publicly, their best services to all connected with the  
mining interest.

**M**essrs. WATSON BROTHERS are daily asked their opinion of particular  
mines, as well as to recommend mines to invest or speculate in, and they  
give their advice and recommend mines to the best of their judgment and ability,  
founded on the best practical advice they can obtain from the mining districts,  
but they will not be held responsible, nor subject to blame, if results do not  
always equal the expectations they may have held out in a property so fluctuating  
as mining.

**COLLIERIES, IRONWORKS, &c.**  
Among the great complaints of metallic miners of late, has been the high prices  
of Coal and Iron: thus while dividends in Copper and Tin Mines have been gradually  
declining, many Collieries and Ironworks have been paying 20, 30, and even 60 per  
cent.; and in consequence of this, **Messrs. WATSON BROTHERS** have had several  
enquiries from clients for prices and particulars of the best investments in both  
classes, and they are collecting information which they hope to publish from time  
to time, and will be glad if Secretaries and Managers will furnish them with the  
same kind of information that Purasers and Secretaries of Metallic Mines have so  
freely done during the last 30 years. In the meantime they will be ready to deal  
at Market prices, in any or all of them.

In the Press, 8vo., price 5s.  
**R**EVIEW OF BRITISH AND FOREIGN MINES, FOREIGN  
BONDS, RAILWAYS, JOINT STOCK BANKS, MISCELLANEOUS.  
By the Author of the "Science of Investments."  
Early application is requested in order to secure the FIRST EDITION.  
**M**ESSRS. HARRISON AND CO., FALCON COURT, TEMPLE BAR

**GUIDE TO INVESTMENTS.**  
Published monthly. Post free.  
**S**PARGO'S "GUIDE TO INVESTMENTS"  
affords information (ample and correct) of all the best-paying Investments.  
Capitalists and men of business should consult the "Guide" for reliable and  
valuable intelligence. THOMAS SPARGO,  
Gresham House, Old Broad-street, E.C.  
Established Twenty-six Years, Fifteen at present address.

**MINES AND MINING.**  
Now in the Press, and will shortly be issued.  
**S**PARGO'S ANNUAL STATISTICS AND OBSERVATIONS ON  
THE MINES OF CORNWALL, DEVON, AND WALES.  
The work will contain particulars of all the important mines in the counties  
referred to, and will be illustrated by maps and sections of the various districts,  
forming a complete Guide to Mining Investors.

Price 3s. 6d.; by post 3s. 8d.  
To secure an early copy subscribers are requested to forward their application as  
early as possible. Only a limited number will be issued.

Third edition—enlarged 8vo.—illustrated cover.  
**H**OW TO MAKE MONEY BY PATENTS  
BY CHARLES BARLOW.  
Free by post for Fourteen Stamps.  
BARLOW and Co., 23, Southampton-buildings, Chancery-lane, London, W.C.

**M**INING PROSPECTUSES AND ANNOUNCEMENTS OF  
PUBLIC COMPANIES should be inserted in the BARNSTAPLE TIMES,  
published every Tuesday, and in the DEVON POST, published every Saturday, in  
these papers circulate largely throughout Devon and Cornwall, where many thou-  
sands of investors reside. Legal and Public Companies' advertisements, 6d. a line  
each insertion; Trade and Auctions, 4d. a line; Wanteds, &c., 20 words, 1s.  
Published by J. B. JONES, Bountport-street, Barnstaple, Devon to whom all orders,  
by post or telegraph, should be sent.

Just published, Free Edition.  
**G**UIDE TO HEALTH; or, ADVICE AND INSTRUCTIONS FOR  
THE CURE OF NERVOUS DEBILITY.—A New Medical Work on  
the Treatment of Local Debility, Consumption, Loss of Memory, Physical Depression,  
Indigestion, and all diseases resulting from loss of nerve power. Illustrated with  
cases and testimonials. Sent free for two stamps.—Dr. SMITH will, for the benefit  
of country patients, on receiving a description of their case, send a confidential  
letter of advice.—Address, Dr. H. SMITH, 8 Burton-crescent, London, W.C.

## THE MINING SHARE LIST.

## BRITISH DIVIDEND MINES.

Shares.	Mines.	Paid.	Last Pr.	Clos. Pr.	Total divs.	Per share.	Last paid
1500 Alderley Edge, c, Cheshire*	10 0 0	—	—	—	11 16 8...	0 5 0	Oct. 1873
20000 Alt-y-Crib, t, Talybont*	2 0 0	—	—	—	0 0 6...	0 6 0	Feb. 1873
30000 Bampfylde, c, i, mn, Devon*	1 0 0	—	5 1/2	5 1/2	0 2 0...	0 2 0	June 1873
5500 Blaen Caelan, s/l, Cardigan* (24 sh.)	3 10 0	—	3	2 1/2	0 10 9...	0 10 9	Oct. 1871
18000 Boscastle Downs, t, c, St. Just*	3 0 0	—	2	1 1/2	2...	0 2 0	Oct. 1871
20000 Botallack, t, c, St. Just...	106 5 0	65	66 65	61 15 5...	0 10 0...	5 0 0	Aug. 1872
50000 Bramford, *s/l, (23000 Dch. B.s.p.c.t.)	100 0 0	—	35	30 35	110 0 0...	0 2 0	Jan. 1872
40000 Brookwood, c, Buckfastleigh	1 16 0	—	—	—	2 14 6...	0 6 0	Nov. 1873
3544 Cargill, s/l, Newlyn	4 16 11	—	1 1/2	1 1/2	4 16 3...	0 12 6	Oct. 1872
6400 Cashwell, t, Cumberland*	2 10 0	—	—	—	1 4 0...	0 4 0	Aug. 1872
7500 Castle-an-Dinas, t, St. Columb*	2 0 0	—	—	—	0 0 0...	0 0 0	July 1873
1000 Carn Brea, c, Illogan	35 0 0	—	62	55 80	307 0 0...	1 5 0	Oct. 1873
6000 Cath, & Jane, t, Penrhynedraeth	5 0 0	—	—	—	0 7 6...	0 7 6	June 1873
2450 Cook's Kitchen, t, Illogan	19 14 9	13	11 12	11 17 0...	0 7 6...	0 7 6	Jan. 1873
10244 Devon Gt. Consols, t, Tavistock*	0 12 0	—	2	1 1/2	116 10 0...	0 12 0	May 1872
2806 Dolcoath, c, t, Camborne	10 14 10	55	47 2 50	104 4 2...	0 12 6...	0 12 6	Jan. 1874
10000 East Ballawleddin, t, Sancered*	1 0 0	—	2	1 1/2	0 2 6...	0 5 0	Nov. 1873
6144 East Cardigan, c, St. Cleer*	2 14 6	—	1 1/4	1 1/4	14 19 0...	0 2 0	Oct. 1872
300 East Darton, t, St. Columb	32 0 0	—	—	—	216 10 0...	1 0 0	Sept. 1873
6400 East Pool, t, Illogan	0 9 9	10	8 1/2	9 2...	13 11 3...	0 2 6	May 1873
5000 Exmouth, s/l, Christow	0 7 6	—	—	—	0 1 0...	0 1 0	May 1873
2806 Foxdale, t, Isle of Man*	25 0 0	—	—	—	80 15 0...	0 10 0	Sept. 1872
3550 Gawton, c, Tavistock	3 10 6	—	—	—	0 13 0...	0 5 0	May 1872
40000 Glasgow Cara, c, [30,000 £1 p., 10,000 15s. p.]	—	—	—	—	0 4 10 0...	0 1 0	Sept. 1873
15000 Great Laxey, t, Isle of Man*	4 0 0	—	13 1/2	13 13 1/2	16 11 0...	0 10 0	Oct. 1873
25000 Great West Van, t, Cardigan*	2 0 0	—	2	1 1/2	0 1 0...	0 1 0	Sept. 1873
5000 Great Wheat Vor, t, c, Helston	40 5 0	—	2 1/2	2 1/2	15 19 6 0...	0 2 6	June 1872
6400 Green Hurlt, t, Durban*	0 6 0	—	5	4 1/2	62 5 0...	0 15 0	Oct. 1872
10244 Herdfoot, t, near Liskeard*	8 10 0	—	5	4 5	1 4 0...	0 4 0	Nov. 1873
18000 Hington Downs, c, Calstock* (£1 sh.)	—	—	1 1/2	1 1/2	4 3 0...	0 5 0	Sept. 1873
25000 Killaloe, s/l, Tipperary	1 0 0	—	—	—	0 3 11 1/2 0...	0 6 0	Mar. 1873
40000 Lisburne, t, Cardiganshire	18 15 0	—	—	—	2 16 0 0...	0 4 0	Aug. 1873
5120 Lovell, t, Wendron	0 10 0	—	—	—	0 18 0...	0 3 6	July 1872
90000 Minera Mining Co., t, Wrexham*	5 0 0	—	30	30 32 1/2	63 5 8 0...	0 4 0	Oct. 1873
20000 Mining Co. of Ireland, c, t, *s	7 0 0	—	5 1/2	5 1/2	0 8 0...	0 3 6	July 1872
12000 North Hendre, t, Wales	2 10 0	—	—	—	0 10 0...	0 2 6	Nov. 1873
20000 North Levant, t, c, St. Just	10 17 0	—	—	—	4 13 0...	0 12 0	Sept. 1873
3694 Pedn-an-drea, t, Redruth	8 2 0	—	3 1/2	3 3 1/2	0 5 0...	0 5 0	Nov. 1871
5000 Penhalis, t, St. Agnes	3 0 0	—	2 1/2	2 1/2	3 3 0...	0 2 0	Jan. 1874
60000 Penstruthal, t, c, Gwennap	2 0 0	—	1/2	5 1/2	0 1 0...	0 1 0	Nov. 1873
60000 Phoenix, t, c, Linkinhorne	4 3 4	—	5/2	5/2	39 19 10 0...	0 4 0	Nov. 1872
1772 Polberro, t, St. Agnes	15 0 0	—	—	—	1 12 6 0...	0 5 0	Mar. 1872
18000 Prince Patrick, s/l, Holywell	1 0 0	—	—	—	0 5 0...	0 2 0	Jan. 1874
1120 Providence, t, Lelant (last call Dec. '73)	12 16 7	8 1/2	7 8	104 12 6...	0 10 0...	Sept. 1872	
12000 Roman Gravels, t, Salop*	7 10 0	—	17 1/2	17 17 1/2	3 5 0...	0 8 6	Dec. 1873
16000 Shelton, cl, t, St. Austell	1 0 0	—	—	—	0 1 0...	0 1 0	Feb. 1872
60000 Slifemore Dressing, t, Calstock*	1 0 0	—	—	—	0 1 1 0...	1 1 1/2	Sept. 1873
512 South Cardigan, c, St. Cleer	1 5 0	100	90 95	711 0 0...	0 2 0 0...	0 10 0	Nov. 1873
5000 South Carr Brea, c, t, Illogan	1 17 6	3/4	3 1/2	10 0 0...	0 2 6 0...	0 6 0	July 1872
6000 South Darren, t, Cardigan*	3 6 6	—	—	—	1 1 6 0...	0 1 0	Sept. 1870
242 Spearne Moor, t, St. Just	38 17 9	—	—	—	17 5 0...	0 10 0	June 1872
8771 St. Just Amalgamated, t*	3 10 0	—	—	—	0 9 0...	0 4 0	Nov. 1871
12000 Tankerville, t, Salop*	6 0 0	—	9 1/2	9 9 1/2	3 8 0...	0 6 0	Feb. 1873
25000 Terras, t, St. Austell	1 0 0	—	—	—	0 3 0...	0 1 6	Sept. 1873
60000 Tincroft, t, Pool, Illogan	9 0 0	—	42 1/2	38 40	46 3 6...	0 10 0...	Oct. 1872
40000 Trumpet Consols, t, Helston	5 15 0	—	6 1/2	5 1/2	9 11 0...	0 10 0	Nov. 1872
15000 Van, t, Llanidloes*	4 5 0	—	36	30 32 1/2	11 17 0...	0 15 0	Dec. 1873
30000 W. Chiverton, t, Perranzabuloe*	10 0 0	—	6	6 1/2	52 10 0...	0 5 0	June 1873
2048 West Wheal Frances, t, Illogan	27 3 9	12	10 11	8 12 6 0...	0 6 0 0...	0 5 0	Oct. 1872
612 Wheal Bassett, c, Illogan	5 2 6	30	24 26	638 10 0...	1 10 0...	0 10 0	Aug. 1872
4295 Wheal Kitty, t, St. Agnes	5 4 6	10	9 9 1/2	11 1 6 0...	0 6 0 0...	0 6 0	Nov. 1873
996 Wheal Margaret, t, Umy Leant	13 17 6	3	2 1/2	2 1/2	82 2 3 0...	0 10 0	May 1873
10000 Wheal Mary Ann, t, St. Dennis*	5 0 0	—	—	—	0 1 0...	0 1 0	Jan. 1873
12000 Wheal Mary Ann, t, Menheniot	10 0 0	—	2	1 1/2	74 5 6...	0 2 6	June 1873
12000 Wheal Rutilus, c, Tavistock	1 0 0	—	—	—	0 2 0...	0 1 0	Jan. 1873
1356 Wheal Roseland, t, Camborne	73 0 0	—	20	17 1/2 20	256 5 6 0...	0 10 0	Oct. 1873
10000 Wheal Stiper, t, c, Warleggan*	1 0 0	—	—	—	0 1 6 0...	0 6 0	May 1873
25000 Wicklow, c, sul, t, Wicklow	2 10 0	—	3 1/2	3 3 1/2	52 9 0 0...	0 2 6 0	Mar. 1872

## FOREIGN DIVIDEND MINES.

Shares.	Mines.	Paid.	Last Pr.	Clos. Pr.	Last Cull.
35500 Alamillos, t, Spain*	2 0 0	—	2 1/2	2 1/2	1 1 9 0...
300000 Almada and Trito Consol., *†	1 0 0	—	7 1/2	7 1/2	0 4 3 0...
20000 Australian, c, South Australia*	7 7 6	—	13 1/2	13 1/2	0 11 6 0...
10000 Battle Mountain, s/l, (6240 part pd.)	5 0 0	—	4 1/2	4 1/2	0 10 0...
15000 Birdseye Creek, g, California*	4 0 0	—	3 1/2	2 1/2	0 9 0 0...
60000 Bensberg, s/l, Germany*	10 0 0	—	7	6 7	0 17 4 0...
12320 Buena Bura, c, Australia	6 0 0	—	30	28 30	56 0 0...
20000 Cape Copper Mining, *s/l, S. Africa.	7 0 0	—	2 1/2	2 1/2	14 15 1 0...
40000 Cedar Creek, g, California*	5 0 0	—	2 1/2	2 1/2	0 10 0...
30000 Central American Association*	0 15 0	—	—	—	0 6 0 0...
15000 Chicago, s/l, Utah	7 0 0	—	6 1/2		